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THE

DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

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MEDICAL SCIENCE.

JULY 1, 1914.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Experiences with the Wassermann Reaction.*[a] By E. J. McWEENEY, M.A., M.D., D.P.H., F.R.C.P.I.; Professor of Pathology and Bacteriology, University College, Dublin.

INTRODUCTORY OBSERVATIONS.

SINCE the introduction of the Wassermann reaction seven years ago, no communication has, as far as I am aware, been made to the Royal Irish Academy of Medicine in Ireland on the subject, and although a considerable number of cases have been tested in Dublin and Belfast, most of the work has, I believe, been done by one or other of the simplified methods, which, in the opinion of the most experienced workers, are not as reliable as the full technique.

Since the month of September I have been occupying most of my spare time in performing this test, with the technique evolved by M'Intosh and Fildes at the London Hospital, and set forth in their excellent book on

[a] Read before the Section of Pathology in the Royal Academy of Medicine in Ireland on Friday, May 1st, 1914.

Syphilis.[a] The technique differs from the original only in the use of a non-specific "antigen" and of smaller quantities of the various constituents. In a sense, I have been to blame for not taking up this work sooner—nor could I have done so, even now at the eleventh hour, were it not that I was able to secure the assistance I required at the hands of Mr. H. F. Moore, M.B., N.U.I., who has since obtained the Travelling Studentship in Pathology at the National University of Ireland.

The number of specimens I have examined so far is, no doubt, relatively small—amounting to about 240. This is due to the fact that I have had, so to speak, to create a demand for the test, some of the clinicians with whom I am in relation having got into the habit of sending their blood-specimens to England to be tested, whilst others did without the test altogether.

My object in coming forward with this communication is not to add anything new to the literature of the subject, but rather to draw the attention of clinicians in Ireland to the paramount importance of this reaction in the diagnosis of syphilis. Every one who has concerned himself with the subject will agree with M'Intosh and Fildes when they say that, at the present day it is doubtful whether a diagnosis of syphilis in a given case is permissible without either the demonstration of the Spirochæte, on the one hand, or a properly conducted serum-examination by the Wassermann method on the other.

Syphilis, moreover, is a disease which is so readily influenced by treatment, and which when neglected gives rise to such grave results, that its diagnosis is a matter of the highest practical importance. Since the discovery of the Spirochæte by Schaudinn in 1905, and of the Wassermann reaction two years later, syphilis has been looming ever larger in the public eye, and is now looked upon as, next to tuberculosis, the most widespread of infectious diseases. Noguchi, followed by Mott and others, has shown that the so-called para-syphilitic affections of the

[a] Syphilis from the Modern Standpoint. London. Arnold. 1911.

central nervous system are in reality syphilitic, and that the lesions harbour the Spirochætes. Fraser and Ferguson Watson (*Journal of Mental Science*, 1913) have recently found a positive Wassermann in more than 60 per cent. of the cases of mental deficiency in children, and say that "Syphilis is the main causative factor in the production of that type of epilepsy which manifests itself at early ages."

These authors, moreover, point out that only "a very small percentage of such cases show external evidence of congenital syphilis"—hence without the Wassermann reaction their true nature could not be discovered. Other serious results of congenital syphilis are blindness, deafness, stunted growth, paralysis, and general debility, as pointed out by Mott (in his evidence given before the Royal Commission on Venereal Diseases, quoted in the *Medical Officer*, December 20th, 1913, page 300). The same observer mentions that 2 per cent. of all cases of general paralysis of the insane are juvenile cases due to congenital syphilis, and that the percentage would be much higher but for the fact that the majority of the children whose brains become affected die early in life or are born dead.

In gynæcological practice, moreover, the systematic employment of the Wassermann reaction has revealed a quite unexpected prevalence of syphilis. Working in Glasgow, A. L. M'Ilroy, Ferguson Watson, and J. H. M'Ilroy (*British Medical Journal*, October 18th, 1913) tested 100 female out-patients, drawn chiefly from the respectable working classes, and obtained positive results in no fewer than 43.[a] Only six of these women gave histories pointing to syphilitic infection. In the remaining 37 no such history was obtainable, nor were there any physical signs of syphilis. Many of these cases were suffering from uterine hæmorrhage. They suggest that in obstinate cases of this condition, where tumour can be excluded, the existence of latent syphilis should be sus-

[a] The validity of these results has since been called in question. Thiele and Embleton. (Lancet. 1914. Vol. I., p. 1034.)

pected and the Wassermann reaction carried out. They saw good results ensue from anti-syphilitic treatment in some instances, which had failed to respond to curetting, &c. A highly interesting point raised by these authors has reference to the fertility of such latent cases. There was no case of sterility amongst their married patients whose blood was positive to Wassermann. One of the authors (Ferguson Watson) has, indeed, published (*British Medical Journal*, April 26th, 1913) a case in which there was abnormal fertility (six children in twenty-two months) in a family where both father and mother gave positive reactions. On the other hand, as confirming the more commonly entertained view, Mott (*loc. cit.*) quotes histories of 34 syphilitic mothers as giving 175 conceptions, resulting in 104 premature births, still-births, and deaths in early infancy, 41 diseased in some serious form or other, and only 34 healthy or doubtful, whereas of the Glasgow children born of positively reacting mothers only two showed definite clinical evidence of syphilis. Surely here there is matter for further investigation, and I ask why should not Dublin, with its high reputation as a centre of obstetrical and gynæcological practice and teaching, contribute its share to the solution of so interesting a problem?

These considerations lead us irresistibly to the conclusion that in the interest of the race which, here in Ireland, suffers to such an appalling degree from insanity, some systematic effort ought to be made by our asylums, homes for mentally deficient children, hospitals for diseases of women, as well as by our general hospitals, to ascertain by systematic employment of the Wassermann method the exact extent to which syphilis, whether acquired or congenital, prevails among their inmates. In this way alone may we hope to intervene at the psychological moment between the disease and its victims, and thus save many children from becoming a burden on the community, and many adults from arterio-sclerosis, aneurysm, and premature mental decay.

A Royal Commission is at present collecting information with regard to the prevalence and prevention of syphilis, and Dr. Meldon has been deputed to give evidence before it as to the state of things in Dublin.

I. THE TEST.

The principle upon which the Wassermann test depends—viz., the fixation or deviation of complement by union of antigen with its corresponding antibody and the detection of such fixation by means of an incomplete hæmolytic system—is by this time so well known that it requires no explanation before an audience such as this.

The constituents necessary for carrying out the test are, of course, six in number—viz. :

1. Patient's serum containing, or suspected to contain, the supposed syphilitic antibody or Wassermann body.
2. Extract of normal organ (in substitution for specific antigen).
3. Complement (fresh guinea-pig serum).
4. Hæmolytic amboceptor.
5. The corresponding corpuscles (I always use sheep's).
6. Normal saline (.85 per cent.).

A few words must be said about each constituent.

1. *Serum.*—The best way to obtain the necessary serum is to puncture a vein in front of the elbow with a sterile hypodermic needle, and let the blood flow through the needle into a test-tube. A few turns of a bandage or a piece of rubber tubing wound tightly round the upper arm by way of tourniquet, generally cause the veins to become sufficiently prominent, and the effect may be enhanced by slapping the front of the elbow with the open hand. The skin-area selected for puncture should be disinfected with iodine or 2 per cent. lysol solution. At least 5 c.c. of blood should be taken. This method is less painful and more efficient than drawing blood from the fingers. An adequate supply of serum—at least 1 c.c.—is absolutely essential in doubtful cases, or where quantitative results are required, as usually happens when salvarsan has been

administered. The serum should be pipetted off the clot as soon as possible after it has separated. If not absolutely clear it should be centrifuged. It is then transferred to a small sterile test-tube. It should then be inactivated at 55° for half an hour, in order to deprive it of complement. All manipulations with the serum should be as aseptic as possible, more especially if any of it is to be kept over till the next batch of tests. Should it appear likely to have undergone contamination, it should be kept in the ice-chest. Serums in which microbic growth has taken place are capable of absorbing complement by themselves alone, and tend to give falsely positive results ("Eigenhemmung"). This source of error is, however, guarded against by the second or control tube, which is put up for each serum—the tube without extract. If that tube is not completely hæmolysed, then any inhibition present in the chief tube is robbed of its diagnostic value, as it may be due to the summation of the anti-complementary effects of serum and antigen. We sometimes find that serums which are opalescent, owing to their having been drawn off during digestion, or reddish, owing to hæmolysis having occurred in the blood from which they were obtained, tend to absorb complement, and, generally speaking, such serums are to be regarded as unsuited to the test, which should be applied only to limpid, straw-coloured serum.

The effect of inactivating the serum is, of course, to deprive it of its complement. We do not want any more complement than that which is deliberately added in carrying out the test. At first sight it would seem that the use of fresh (*i.e.*, non-inactivated) serum ought to increase the number of *negative* results, owing to the presence of more complement than that which is deliberately added in the form of fresh guinea-pig serum. This additional complement should, theoretically, tend towards increased hæmolysis, and thus simulate a negative result. In practice, however, the contrary is found to be the case. Active—*i.e.*, unheated—serums tend to inhibit

hæmolysis. On many occasions I have noted this fact not merely in serums sent for diagnosis, but in specimens known to be normal. Such serums when kept some time tend to give strong non-specific inhibition. I have known this to occur in a sample of negative serum taken from one of ourselves the day previous to the test. After inactivation, it was quite negative—used active it gave strong inhibition by itself alone (as well as with antigen), and thus proved unsuitable for use as a negative control. For some time I have been in the habit of doing the test not only with inactive, but also with active serum, and will give the figures later on. Meanwhile we have to find an explanation of this behaviour of active serum. It would appear that normal serum, more especially after keeping, tends to contain substances which we may call "pseudo-Wassermann bodies." These substances, like the real Wassermann bodies, are probably the product of cell-break-down, for they occur more abundantly in hæmolysed specimens and in serum that has been a long time in contact with the clot. They differ from the true reaction-bodies in that they are more or less thermo-labile, and disappear during inactivation, also in the fact that they absorb complement without the presence of antigen.

It is essential that with every batch of tests a known syphilitic and a known normal serum should be tested.

On account of the fact that the results of numerous tests done with the same ingredients and under precisely similar conditions tend to correct each other, and also in order to avoid unnecessary waste of guinea-pigs, the Wassermann reaction should never be undertaken for the diagnosis of a single case, but should always be applied to batches of serums—the larger the better.

The amount of serum used in the test as we carry it out is .1 c.c. When testing spinal fluids we always use varying amounts up to .5 c.c.

2. *Extract or so-called "antigen."*—At present I make this from the heart-muscle of a freshly-killed sheep by thorough mincing, grinding in a mortar with silver sand,

extracting with five times its volume of 97 per cent. alcohol, shaking for several hours, leaving overnight in the incubator, and filtering. It does not seem to "go off" or change very materially in its antigenic power—at any rate when kept in the dark. If used in sufficient quantity, extract inhibits or absorbs complement. The larger the amount required to do this the better the extract. Some batches of extract absorb so much complement by themselves alone, or in presence of normal serum, that they are quite useless for the test. The best are those that give a wide range in the amount of complement absorbed in presence of (*a*) syphilitic, and (*b*) normal serum, or, if the amount of extract be varied, give complete inhibition in very small doses when in presence of syphilitic serum, and fail to inhibit, even in large doses, when the serum present is normal. In titrating the extract the object is to ascertain the smallest amount which is able by itself alone to absorb the amount of complement used in the test, say $2\frac{1}{2}$ M.H.D. (= Minimum Hæmolytic Doses). I take a typical example from the Laboratory note-book (Table I.) :—

TABLE I.—Standardisation of Extract made from Sheep's Heart. 25th February, 1914.

								Control
Saline	.75	.725	.7	.675	.65	.625	.6	.8
Extract	.05	.075	.1	.125	.15	.175	.2	0
Compt. $\frac{1}{3}$	.1	.1	.1	.1	.1	.1	.1	.1
Incubate for one hour at 37°, then add								
Ambo. 1/44.4	.1	.1	.1	.1	.1	.1	.1	.1
Corps. 1/20	.5	.5	.5	.5	.5	.5	.5	.5
Result	Complete	Compl.	Compl. (nearly)	$\frac{1}{2}$ hæmolysed	0	0	0	Complete

M. H. D. Compt. = .1 of 1 in 6, 2 M. H. D. = .1 of 1 in 3.
Extract dose inhibiting 2 M. H. D. Compt. = .15.
$\frac{1}{3}$ of this dose = .05 = amount to be used in actual test.

Following M'Intosh and Fildes, I use one-third of this amount for the test. The figure I have usually obtained is .15 or .125 as the M. inhibitory dose, and the quantity I use, therefore, is .05. I have recently found that as little as .01 of this extract gives complete inhibition in presence of .1 of strong syphilitic serum, whilst ten times that amount does not interfere with hæmolysis in the presence of a normal serum.

With regard to the composition of the extract, some authors—notably Walker and Swift, of the Rockefeller Institute (*Journal of Experimental Medicine*, 1913, page 75)—as well as in the Glasgow School, headed by Prof. R. Muir—strongly recommend the use of cholesterin. Hitherto my results with extract containing cholesterin have not been quite satisfactory. The cholesterin seems to me to be a rather strong non-specific absorber of complement, but the amount I added (1 per cent.) was undoubtedly too large. I mean to give a careful trial to human heart antigen containing .4 per cent. of added cholesterin, as suggested by Walker and Swift, as well as to the new liver-phosphatid antigen, recently introduced by Thiele and Embleton,[a] with a sample of which Dr. Thiele has very kindly provided me.

(Since writing the above, I have tested the antigenic power of Thiele and Embleton's extract, and found it very delicate—as little as 1 cubic millimetre gave complete inhibition in presence of 0.1 c.c. of strong syphilitic serum, whilst 100 cubic millimetres did not interfere with hæmolysis in presence of normal serum, though it produced so much turbidity as almost to simulate inhibition.)

3. *Complement.*—This is contained in fresh guinea-pig serum. Some workers have adopted the plan of puncturing the animal's heart with a long needle, so as to obtain a few c.c.'s of blood without killing it. I have seen a statement to the effect that the serum of animals that have been repeatedly punctured loses its complementing power, but, apart from this, I do not like the procedure,

[a] Lancet. 1914. Vol. I. P. 526.

and prefer to have the animal killed by cutting the throat and letting it bleed into a sterile Petri dish. As soon as the serum has separated it should be carefully pipetted up into a sterile glass and centrifuged free of corpuscles. The next thing to do with it is to titrate it so as to find its M.H.D. for the unit volume of sensitised corpuscles. The diagram shows a typical example of such a test :—

TABLE II.—Standardisation of complement, g–p. killed 7th January, serum tested 8th January, 1914. Dilution = 1 : 24.

Saline	.9	.85	.8	.75	.7	.65	.6	.55	.5
Compt. 1/24	0	.05	.1	.15	.2	.25	.3	.35	.4
Ambo. 1/133	.1	.1	.1	.1	.1	.1	.1	.1	.1
Corps. 1/20	.5	.5	.5	.5	.5	.5	.5	.5	.5
Result in 1 hr.	0	0	trace	trace	½ hd.	¾	Compl.	Compl.	Compl.

M. H. D. = .3 of 1 : 24 = .1 of 1 : 8.
2 M. H. D. = .1 of 1 in 4.
Use for test .1 of 1 in 3.

We use 2 or 2½ M.H.D. in the actual test, and dilute the serum so that the proper amount is contained in .1 c.c. As is well known, complement is highly labile. For this reason, if we have to keep it over, we always freeze it solid with ice and salt in a *thermos* flask, a plan which I first saw adopted by Drs. M'Intosh and Fildes at the London Hospital. So preserved, it loses power much more slowly—we found that in forty-eight hours it had lost about half its strength. By titrating it each day and freezing it when not in use, the same batch can be made to do duty for nearly a week.

Guinea-pigs that are dying of infections do not yield satisfactory complement. We once used the serum of an animal in an advanced stage of tuberculosis, and found its M.H.D. very high indeed. Sometimes a guinea-pig that is apparently healthy yields a serum unexpectedly deficient in complementing power. For example, the last animal we killed yielded a serum with a M.H.D. of .8

instead of .0125 as usual, so that we had to use as much as .16 of crude complement serum in each tube instead of .025 as usual.

4. *Amboceptor Serum.*—This is the serum of a rabbit that has been immunised against sheep's red corpuscles. We have prepared it, and on testing a small amount obtained by bleeding the rabbit from the ear, we found its M.H.D. quite low enough to work with. Unfortunately, we were not satisfied, and decided to give a final dose of corpuscles, whereupon the animal died of anaphylaxis. Rabbits undergoing treatment with sheep's corpuscles often become cachectic, so that it becomes necessary to start immunising several at once. The process is troublesome so that we now procure the hæmolytic serum ready-made. It is diluted 1-1000 with saline and its M.H.D. determined as seen in the diagram (Table III.).

Table III.—Standardisation of Batch of Amboceptor-Serum (Merck's). 18th December, 1913.

										Controls	
Saline	.8	.7	.6	.5	.4	.3	.2	.1	—	.9	.5
Ambo. 1/1000	.1	.2	.3	.4	.5	.6	.7	.8	.9	—	.5
Compt. 1/4	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	—
Corps. 1/20	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
Result	½ hd.	¾ hd.	Compl	Compl.	Compl.	Compl.	Compl.	Compl.	Compl.	0	0

M. H. D. = .3 of 1 : 1,000. 2½ M. H. D. = .1 of dil. 1 : 133.

Not more than 1 c.c. of 1 per 1000 dilution should be required—weaker amboceptor yields incomplete hæmolysis and unsatisfactory results. We use 2 or 2½ M.H.D. for the actual test. We find that 1 per cent. dilution of the amboceptor-serum keeps quite well for two or three days without special precaution.

5. *The Sheep's Red Corpuscles.*—The blood is obtained at the slaughterhouse, and at once defibrinated by shaking with glass beads. It is shaken up with sterile saline, and the corpuscles are centrifuged down. This procedure is

repeated three times to get rid of the last trace of adherent serum. The corpuscles are then pipetted up and suspended in twenty times their volume of sterile saline. They are then ready for use. In warm weather they must be kept in the refrigerator, as, not being aseptic, they have a great tendency to undergo spontaneous hæmolysis. This might be prevented by adding a small proportion—say, .1 per cent.—of formalin to the saline in which they are washed. I have not yet tested such formalised corpuscles in actual practice. The corpuscles may be put in separately, or, if preferred, they may be first *sensitised* by addition of the proper amount of diluted amboceptor serum and thorough mixing. When a large number of tests have to be made we usually sensitise the corpuscles beforehand, as it simplifies the procedure.

6. *The normal saline* used for bringing the contents of tubes to constant volume should be filtered and sterile.

II. PRACTICAL APPLICATION OF THE TEST.

For carrying out the test we require the following articles :—

1. An adequate supply of small test-tubes, about 4 inches long by $\frac{3}{8}$ inch wide. They must be clean, dry, and preferably sterile.

2. Tube-racks to hold 24 in a double row.

3. Graduated pipettes of the following kinds :—

(*a*) 10 c.c. divided .1 c.c.

(*b*) 1 c.c. divided. 01 c.c.

(*c*) .1 c.c. divided .001 c.c.

Variety (*c*) may be conveniently throttled and provided with a teat, after Wright's method, to facilitate accurate delivery of very small quantities of fluid. It is, however, better to dilute the constituents in bulk, so as not to have to measure quantities smaller than .05 c.c. For patient's serum we use pipettes drawn out of pieces of $\frac{1}{8}$-inch bore glass tubing, calibrated with mercury to deliver .1 and .05 c.c., and provided with a teat. A large number of these can be provided and sterilised.

In carrying out the test two tubes are needed for each serum—one with and one without antigen. The latter serves to show whether the serum by itself alone is capable of absorbing complement or interfering with hæmolysis. If hæmolysis is not complete in the tube without antigen, any inhibition noted in the other tube is deprived to a large extent of its diagnostic value. An important point in carrying out the test is that the contents of all the tubes should be brought to the same volume with normal saline. We begin by setting down the quantities of the various constituents and calculate how much normal saline is needed to bring the total volume up to some definite fixed quantity. In our work this is 1.5 c.c. We begin by putting in the proper amount of saline, then we add the antigen by allowing it to run down the side of the tube and form a white opalescent ring on the surface of the saline. Only one of the two tubes for each serum (that in the front row) receives antigen. When all the tubes are charged, each is rolled between the hands so as to mix the antigen with the saline. There seems to be a difference of opinion as to whether it is better to mix the liquids quickly or slowly. After the antigen comes the patient's serum (0.1), and then the complement, diluted so that 2 or 2½ M.H.Ds. are contained in .1. The rack with the tubes is now placed in the incubator at 37° C. for an hour, in order to allow binding to take place. They are then taken out and the corpuscles (sensitised or not) are added. If they have not been sensitised then the amboceptor serum must be added separately, so diluted that twice the M.H.D. is contained in .1 c.c. With one of my tests I tried the effect of freezing the mixture of extract plus serum plus complement for a few minutes, and after thawing added the sensitised corpuscles and incubated for an hour. I found that, in most of the positive tubes, binding took place at 0 degrees in five minutes or less. If time were of importance it might, therefore, be saved by freezing the primary mixture. After the lapse of an hour the tubes are taken out of the

incubator and the result is noted. They are then placed in the refrigerator till next day, when the results are finally read off.

For each batch of tests three controls are necessary (in addition, of course, to the non-antigen control for each serum). The first control contains antigen plus the hæmolytic system but no serum. This is intended to ensure that the antigen alone does not inhibit hæmolysis in the quantity used. The second control is without either serum or antigen; it contains the hæmolytic system alone. The third control contains the hæmolytic system minus the complement. The first and second controls should, of course, be completely hæmolysed, whilst the third should show no trace of hæmolysis; it is merely intended to exclude the possibility of spontaneous hæmolysis.

The following scheme shows the quantities used for each serum and the three controls :—

TABLE IV.—Actual Test.

	For each serum		General Controls		
Saline	.65	.7	.75	.8	.9
Antigen . . .	.05	—	.05	—	—
Serum	.1	.1	—	—	—
Complement $1/x$ . .	.1	.1	.1	.1	—
Incubate one hour at 37°, then add					
Ambo. $1/x$ . . .	.1	.1	.1	.1	.1
Corpuscles, 5 per cent. .	.5	.5	.5	.5	.5

Re-incubate one hour: note result.
In ice chest till next day: note final result.
x means the figure for the dilution, obtained by previous titration.

With regard to the quantitative estimation of the results I adopt the method used by M'Intosh and Fildes, of

indicating by four crosses a complete absence of hæmolysis, the supernatant liquid being colourless or nearly so. With three crosses I indicate slight pinkness of the supernatant liquid. With two crosses pronounced redness of the supernatant fluid, with about half of the corpuscles lying undissolved at the bottom, and with one cross almost complete hæmolysis with a small patch of undissolved corpuscles at the bottom.

I have not as yet had time to go more fully into the quantitative aspect, by diminishing the amount of serum as recommended by M'Intosh and Fildes, or increasing the amount of complement as practised by the Glasgow School, but I quite recognise the importance of adopting some such method when endeavouring to appraise the results of treatment.[a]

III. THE TEST AS A DIAGNOSTIC RESOURCE.

The high diagnostic value of the Wassermann reaction is now universally admitted, and I quite recognise that the following statistics add nothing to what is already known. As, however, they are the only figures emanating from Ireland that have hitherto been published, and represent work carried out entirely by the full technique, I think it well to bring them forward thus late in the day.

The total number of fluids and serums I have tested amounts to about 240,[b] a few of which are duplicates from the same person, and only 182 of which are sufficiently well reported to be available for statistical working-up.

[a] I have since tried the effect of raising the quantity of patient's serum to 0.5 c.c., using .1 in another set of tubes. The antigen was Thiele and Embleton's "Phosphatid," 100 cb. mm. The number of serums tested was 20, of which 17 gave similar results with each quantity (.5 and .1). One case (an old treated one) was fully positive with .5, whilst it gave only a trace of inhibition when used in the usual quantity, .1. Another treated case gave a complete negative reaction with .5, whilst with .1 there was marked inhibition (= + 2). The third case—a serum known to be negative—behaved in the same way—marked inhibition with .1 and complete hæmolysis with .5. I have not yet ascertained the cause of these paradoxical results.

[b] I have since (up to June 8) examined 68 additional serums.

From the Lock Hospital I had the opportunity of examining 54 serums, of which 47 came from cases regarded as undoubtedly syphilitic, 7 from undoubtedly non-syphilitic cases, whilst 1 was doubtful.

Of the 47 undoubtedly syphilitic cases, 33, or 71.74 per cent., gave a positive Wassermann reaction, whilst 13, or 28.21 per cent., gave a negative or doubtful reaction. In 10 of the 13 negative or doubtful reactions, the result was ascribable, with more or less probability, to the influence of treatment. On this assumption the percentage of cases in which the reaction was correct was 91.3, whilst that in which the reaction differed from the clinical aspect was 8.7. Of the 7 cases regarded as non-syphilitic all were negative to the test.

From the Mater Hospital, 46 cases are available for statistics. The majority of these are those of out-patients, under the care of Mr. D. Farnan, to whom (as well as to Dr. O'Kelly) I am much indebted for collecting the serums and for the clinical details.

Of the 46, 31 were clinically syphilitic, whilst the other 15 were regarded either as certainly non-syphilitic or else as doubtful.

Of the 31 clinically syphilitic, 22 yielded a positive Wassermann or 71 per cent., whilst 9 were negative or doubtful (29 per cent.).

In 4 of these 9 cases the negative or doubtful reaction was ascribable, with more or less probability, to the effect of treatment.

This leaves 5 cases out of the 31, or 16 per cent., in which the negative reaction was contraindicated by the clinical aspect of the case. The remaining 84 per cent. yielded reactions in accordance with the clinical aspect.

Of the 15 clinically negative or doubtful cases, 11, or 73 per cent., were negative to the test, 1 was positive, and in 3 the result of the test was doubtful.

Coming now to the Richmond Asylum cases, for permission to examine which I am much indebted to Dr. O'C. Donelan, Resident Medical Superintendent, the

total number of cases examined was 35, 26 of which were definitely diagnosticated as general paralytics. Of these 26 cases, 23 gave strongly positive Wassermann reactions, and 3 gave negative results. (The spinal fluid of two of these three was also tested with a negative result.) Hence we have 88 per cent. of general paralytics giving a positive Wassermann, and 12 per cent. negative. On looking up the clinical notes of the 3 negative cases, I find in the case of one of them ("F.") it is stated that "the mental symptoms have practically disappeared, but the physical signs have persisted," and it is, moreover, remarkable that the general health of these three cases seems to be well maintained, whereas 9 of the 23 cases diagnosticated as general paralysis with positive Wassermann are already—four to five months after the test—dead. Time and repeated examination will tell whether, in the three negative cases, the clinical diagnosis or the Wassermann reaction is correct. Of the 9 Asylum cases ronsidered as suffering from conditions other than general paralysis, 7 gave a negative reaction, whilst 2 were doubtful (negative with inactive, positive with active, serum).

Out of the 49 cases sent in from various sources, in only 4 was there a distinct conflict between the clinical aspect and the Wassermann reaction.

Two of these were mothers of children recognised as syphilitic at Temple Street Hospital by Dr. Boyd Barrett, whilst a third was an ex-soldier suffering from tabetic symptoms in the early stage and hemiplegia. There was a history of syphilis many years ago. He had only one month's specific treatment at the time. His serum was negative to Wassermann. Dr. Callaghan has kindly promised to obtain his cerebro-spinal fluid for me when he reappears next month. The fourth was a case sent in by Dr. Atkins, of Cork: the patient had syphilis thirty years ago, and has since had bone trouble in his frontal sinuses—regarded as syphilitic. Four women suffering from multiple miscarriages, but without clinical

evidence of syphilis, all gave negative results. In two women with fibrosis uteri the result was also negative.

Spinal Fluids.—Of these I have not as yet had as many as I could wish to examine. It is the greatest pity that the systematic investigation of the spinal fluid, more especially in the mental and nervous cases which throng our Irish asylums and workhouses, has hitherto been so much neglected. I wish that these words of mine could reach the ears of those responsible for the conduct of our institutions for the care of nervous and psychical cases, so that we could have the *rôle* of syphilis in the production of these maladies thoroughly and systematically investigated throughout the whole of Ireland.

Hitherto I find that I have tested only 15 spinal fluids, of which 7 were from cases actually diagnosticated as general paralysis of the insane—all of which gave a strong positive reaction.

Two fluids were from asylum cases somewhat doubtfully diagnosticated as general paralysis—both were negative.

Three were from asylum cases definitely considered not to be general paralysis—all negative.

Of the three remaining cases, one proved to be otitis media, the second turned out to be disseminated sclerosis, whilst the third was uræmia—all these were negative to the Wassermann test.[a]

IV. TESTS FOR SYPHILIS OTHER THAN THAT OF WASSERMANN.

(1) *Method of Browning, Cruickshank, and M'Kenzie.*—With the help of Dr. Moore I tested this modification which consists in ascertaining the difference of deviating power shown by the serum when in contact with lecithin

[a] I tested nine specimens of spinal fluid (seven of them from general paralytics at the Richmond) by the Nonne-Apelt and Noguchi methods, for globulin. The former method yielded results in agreement with those of the Wassermann test—provided that the fluids were intermingled (not layered as in the Ross Jones modification), and that a time limit of three minutes was observed. With longer observation periods, opalescence was obtained with some fluids that were negative to Wassermann. The Noguchi test gave me too many positive results.

alone, as compared with its behaviour in presence of lecithin + cholesterin.

Three serums were tested, one being a known negative ("pooled" from three of our laboratory workers), another being a known strongly positive, whilst the third was from a girl, aged twelve, with sore throat, alopecia and Hutchinson's teeth, whose two brothers bore the stigmata of congenital syphilis, and yielded positive Wassermann tests. The girl's serum, when tested in the ordinary way, gave only slight inhibition, equal to + 1 or + 2 at the outside, and not enough to justify the diagnosis of congenital syphilis. The corpuscles (sheep's) were sensitised with 3 or 3½ doses of immune body and .5 c.c. of 5 per cent. suspension was used for each tube.

The known negative serum gave complete hæmolysis with the smallest amount of complement used (2 M.H.Ds.), as seen in Table V.

Table V.—Browning-Cruikshank-MacKenzie Method. "Pooled" Normal Serum [McW., M., & McC.]

In each tube— Patient's Serum .05 Extract emulsion, 1/7 .6 sensd. corpuscles .5	Complement M. H. D. = .012. — Amount added								
Lecithin alone	.025	.035	.05	.08	.1	.2	.3	.4	.5
Result	Compl.	Compl.	Compl.	Compl.	Compl.	Compl.	Compl.	Compl.	Compl.
Lec. + Cholesterin Result	Compl.	Compl.	Compl.	Compl.	Compl.	Compl.	Compl.	Compl	Compl.

Controls.

(1) Lecithin emulsion .6 + sensd. corps. = no hæmolysis.
(2) L. & chol. „ .6 + „ „
(3) Lecithin „ .6 + „ + compt. .025 — complete hæmolysis.
(4) L. & chol. „ .6 + „ „ „ „

Result: Hæmolysis complete in both sets with minimum amount of Extract ∴ negative.

TABLE VI.—Browning-Cruikshank-MacKenzie Method. Contrast between a strong and a weak Serum.

In each tube— Patient's serum .05 Extract emulsion 1 7. .6 Sensitised corpuscles .5	Serum Bradley: result by Ord. Wa. = + + + +										
	Complement M. H. D. = .016. — amount added.										
	.05	.075	.1	.15	.2	.25	.3	.35	.4	.6	.7
Lecithin em., result .	0	0	trace	⅓ hd.	Compl. +	Compl.	Compl.	Compl.	Compl.	Compl.	Compl.
Lec. + chol. em., result .	0	0	0	0	trace	trace	trace	½ hd.	¾ hd.	Compl. +	Compl.
	Serum B.H. (? Cong. Syph.): result by ord. Wassermann. +										
Lec. alone, result .	Almost Compl.	— Compl.	Compl.	Compl.	Compl.	Compl.					
Lec. + chol. em., result .	trace	slight	almost Compl.	almost Compl.	+ Compl.	Compl.					

Difference in case of Serum Bradley = .4 = 25 doses of Compt.
„ „ „ B. H. = .125 = 7.8 „ „
Controls worked out correctly — necessarily omitted here.
The critical tubes are indicated with a +

On the other hand, there was a marked difference between the amounts of complement absorbed in presence of each emulsion in the case of the two other serums, as seen in Table VI.

From the above protocol it will be seen that the difference in the amount of complement deviated by the strong syphilitic serum in presence of lecithin alone and of lecithin + cholesterin was .4 (equal to 25 doses), whilst in the case of the child (rightly) suspected of congenital syphilis, but yielding a negative or doubtful Wassermann result, the difference amounted to 7.8 doses. The distinction between this result and that obtained with a certainly negative serum (see Table V.) is much more apparent by this than by the ordinary Wassermann method.[a] The advantage of this method is its superior delicacy in doubtful cases, which are apt to be returned as negative by our ordinary method. Its disadvantages are the large number of tubes needed for each serum with corresponding consumption of labour, complement and emulsion. These would be well invested if the results so obtained could be regarded as absolutely reliable. It is, however, maintained by some workers (and quite recently by Thiele and Embleton, *Lancet*, February 21 and April 11th, 1914) that cholesterin is a powerful non-specific absorber of complement, and that its use tends to the production of positive results with negative or feebly reacting serums. The amount of work I have been able to do so far on the Browning method does not enable me to form an opinion on this point. But I am of opinion that quantitative results can be more easily attained by using diminishing amounts of serum, as recommended by Boas, and very fully worked out by Fildes and M'Intosh ("Brain," Vol. 36, 1913, page 193, *sqq.*).

(2) *Using the Serum Active.*—By this I do not mean Stern's method, for complement from the guinea-pig was

[a] The antigen may, of course, have been to blame. At the time I was using one made from sheep's heart, that gave quite satisfactory results as a rule. The quantity used was .05. Had I used human heart extract + cholesterin, as recommended by Fildes and M'Intosh, I might have had a more satisfactory result with the ordinary method.

always employed. My idea was merely to ascertain the effect of heat (55° for half an hour) on any non-specific reacting substances (pseudo-reagins) that might be present. The number of serums which I tested in this way was 53, 29 of which gave similar results when used active and inactive. Of the remaining 24, 21 gave greater inhibition when used active than when inactivated, whilst with only three the reverse was the case. One of these three was a case of florid secondaries; the other two were general paralytics. All three gave complete inhibition when inactivated, but allowed a distinct amount of haemolysis to take place when used active. This result is, no doubt, to be explained by the presence of excess of complement.

The difference betwen the results obtained with the serum when used active and with the same serum used inactive was occasionally great enough to amount to a difference of diagnosis. This was the case with 9 patients. In 4 of these the positive result obtained by the use of active serum agreed better with the clinical aspect than the negative got with the inactive serum. In 3 cases the clinical diagnosis was doubtful, and in the remaining two the positive result obtained with the active serum was, in the light of the clinical symptoms, undoubtedly wrong.

(3) When I first started doing the Wassermann reaction I had some idea of adopting a simplification of the process, and in order to obtain experience I tested a number of serums—44 in all—by Fleming's method side by side with the full procedure. For a very clear statement of the Fleming technique I am much indebted to Dr. W. W. D. Thomson, of the Pathological Department, Queen's University, Belfast. In 25 cases I observed agreement between the results of the two tests. In 7 cases the results differed, whilst in the remaining 12 the results by the Fleming method were doubtful, so that it was not possible to say whether or not they agreed with the Wassermann reaction. Of the 7 cases where there was a difference between the two tests, 6 reacted positively to Fleming where the Wassermann reaction was negative,

and only one case *vice versâ*. This latter was that of a well-marked case of general paralysis. Of the 6 cases reacting positively to Fleming and negatively to Wassermann, 5 were syphilitic patients from the Lock Hospital who had undergone more or less energetic treatment with salvarsan, whilst the remaining one was also a Lock patient, but presented no sign of syphilis, and had undergone no specific treatment. She had suffered from gonorrhœa.

The outcome of these observations would appear to be that (1) Fleming's method in my hands agrees with Wassermann in a majority of cases.

(2) When it differs from Wassermann it usually does so in the positive direction.

(3) Most of the cases that are positive to Fleming and negative to Wassermann are those of treated syphilitics. The Fleming test would, therefore, appear to be a more delicate indicator of partially suppressed infection than the Wassermann.

(4) Too many doubtful results were obtained—12 out of 44, or nearly 25 per cent.

I feel sure that with better technique and more experience my results by Fleming's method would have been more satisfactory. In consequence of fluctuations in the content of human serum in hæmolytic amboceptor and complement, the results must, however, as it seems to me, often work out uncertainly, and whilst not denying the value of the method, I am of opinion that whenever guinea-pig complement and artificial amboceptor are to be obtained, the Wassermann method is far preferable. The term "Wassermann results," as applied to those obtained by Fleming's method, seems to me, in view of the radical difference between the two procedures, to be of the nature of a misnomer.

(4) *Precipitation Methods.*—The only one of those to which we gave any systematic trial was that of Herman and Perutz, first described by these authors in *Medizinische Klinik*, for 1911, No. 2. This method is a modification of an earlier one described by Elias, Neubauer,

Porges, and Salomon, so far back as 1908 (*Wien. med. Woch.*, 1908, No. 23), in which equal parts (.2 c.c.) of the patient's (inactivated) serum and 1 per cent. solution of sodium glycocholate are mixed and allowed to stand for sixteen to twenty hours in a small test-tube. If the serum is that of a syphilitic case there is a distinct flocculent precipitation—otherwise not. Herman and Perutz add cholesterin to the test mixture and prepare it in the following way :—

Solution A. :—

Sodium glycocholate	2	grams.
Cholesterin	0.4	,,
95 per cent alcohol	100	,,

This solution may be kept in stock; for actual use, 1 part of it is mixed with 19 of distilled water.

Solution B. :—

Sodium glycocholate	2	grams.
Distilled water	100	,,

This must be freshly made up.

The test is carried out by mixing in a small test-tube .4 of the patient's clear, straw-coloured (not hæmolysed!) serum with .2 of the 1 in 20 dilution of solution A. and .2 of the freshly-made solution B. The mixture is allowed to stand at room temperature, and examined after twenty hours. Only distinct flocculent precipitates are to be regarded as positive. From the excellent piece of work done by Thomsen and Boas on this test (*Zt. f. Immunitätsforschung*, Bd. 16, 4-tes Heft., 1913) it appears that the success of the test depends largely on the quality of the glycocholate used. We used Merck's product marked on the label "Extra pure." We did not ascertain the number of drops to the c.c. of the solution, as recommended by the Danish authors.[a]

[a] We have since done this by means of a Traube stalagmometer, kindly lent by Dr. W. W. D. Thomson of Belfast, and found the drop-number yielded by a Kahlbaum and a Merck preparation to be practically the same—87 to 89. Although solutions with this drop-number were found by the Danish authors to give satisfactory agreement with Wassermann, we obtained no better results than before.

The number of cases tested was 39, of which 28, or over 72 per cent., yielded results agreeing with those of the Wassermann reaction, 5 differed, and 6 gave a doubtful result. Of the 5 that differed from the Wassermann, 4 were negative, whilst the Wassermann was positive, and in the remaining one the reverse was the case. In 4 of these cases the result given by the Wassermann was obviously right, whilst the fifth case was that of a woman undoubtedly syphilitic, who had undergone active treatment at the Lock Hospital. Her serum showed only slight inhibition by Wassermann, but was positive to Herman-Perutz (and to Fleming also).

(Since reading this paper I have, with the help of Dr. W. D. O'Kelly, tested 23 additional serums by this method. They were in two batches—one of 14, the other of 9 serums. We found that if, following Thomson and Boas, we regarded as positive only those serums which yielded a distinct flocculent precipitate, and if, moreover, we restricted the observation period to twenty hours, the result of the Herman-Perutz agreed with that of the Wassermann reaction in 10 cases out of the 14—the 4 cases that gave discordant results being positive to Wassermann and negative to Herman-Perutz. If, on the other hand, we accounted mere diffuse turbidity as a positive result, then 13 of the 14 gave accordant results, the only difference being in the case of a woman (the mother of congenitally syphilitic children, who gave a + 4 Wassermann, but was absolutely negative to Herman-Perutz. The other batch, consisting of 9 serums, yielded only 2 positive results by Herman-Perutz, whilst a third became doubtfully positive forty hours after being put up. By Wassermann, 7 of this batch were strongly positive. There were, accordingly, 5 differences from Wassermann, all being in the negative direction. The 5 cases in question were all clinically well-marked cases with distinct histories of infection, 4 being in the secondary, and 1 in the tertiary stage. Four of them gave + 4 reactions, whilst the fifth (a woman at the Lock who had had some treatment) yielded a + 3 reaction

to Wassermann and was quite negative to Herman-Perutz).

The results obtained by us with the Herman-Perutz test are clearly unsatisfactory, and I cannot but agree with the Danish authors when they say that, in its present condition, this test is not to be recommended for clinical purposes. It does not provide a reliable substitute for the Wassermann test.

In conclusion I desire to express my sense of deep indebtedness to Dr. H. F. Moore, Travelling Student in Pathology, N.U.I., who gave me invaluable aid during the earlier stages of the work. My thanks are also due to Mr. D. J. Farnan, Assistant Surgeon to the Mater Hospital; to Drs. G. P. Meldon, Henry Moore, and D. Harrington, of the Lock Hospital; to Drs. J. O'C. Donelan (R.M.S.), M. J. Forde, and P. J. Dwyer, of the Richmond Asylum; and to Dr. R. R. Leeper, R.M.S. of St. Patrick's Hospital, who have kindly sent me material for this work; and also to my assistants, Drs. W. D. O'Kelly and T. T. O'Farrell, without whose aid it could not have been accomplished.

ART. II.—*Clinical Report of the Rotunda Hospital for One Year, November 1st, 1912, to October 31st, 1913.*[a] By HENRY JELLETT, M.D. (Dubl. Univ.), F.R.C.P.I., Master; and DAVID G. MADILL, M.B. (Dubl. Univ.), and R. MARSHALL ALLEN, M.B. (Edin. Univ.), Assistant Masters.

DURING the year ending October 31st, 1913, 2,124 patients were delivered under the care of the Hospital in its Extern Department, and 2,311 patients were admitted to the Maternity Wards. Of the latter number, 299, who were not in labour, were discharged undelivered, and 2,012 were delivered. Thus a total of 4,136 labours in all were attended by the Hospital Staff, being a decrease of 339 on the previous year. When we remember that the

[a] Read before the Section of Obstetrics in the Royal Academy of Medicine in Ireland, on Friday, May 22, 1914.

Insurance Act was in force during the greater part of this year, and that the Maternity Benefit is payable to the greater number of those who usually seek hospital treatment, we think we can congratulate ourselves that the diminution was not greater.

Extern Department.

Table I.—*Nature and Number of Cases Treated.*

Total Deliveries		2,124	
Presentations—			
Vertex		1,791	
,, face to pubes		39	
Face		13	
Brow		2	
Breech		69	
Transverse		4	
Twins		31	
Triplets		1	
Hydramnios		1	
Vesicular mole		1	
Abortions and Miscarriages		237	
Hæmorrhages—			
Unavoidable		4	
Accidental		7	
Post partum		7	
Prolapse of Cord		6	
Operations—			
Manual removal of placenta		28	
Forceps		28	
Version		8	
Suture of perinæal lacerations		245	
Maternal mortality		7	
Infantile mortality—			
Recent		47	
Macerated		3	
Fœtal abnormalities—			
Cleft palate		1	
Exomphalos		1	
Hare lip		1	
Hydrocephalus		1	
Spina bifida		1	
Talipes		1	

Seven deaths occurred in the Extern Department, and eleven deaths in the Intern, being a percentage mortality of 0.32 in the former and of 0.47 in the latter, or a mean percentage mortality of 0.41. In the Extern Maternity four deaths were the result of septic infection, one death the result of accidental hæmorrhage, one the result of unavoidable hæmorrhage, and one the result of pulmonary embolus. In the case of accidental hæmorrhage, the patient was pulseless on the arrival of the student. Stimulants and saline infusion were administered, and the vagina was plugged. The patient, however, collapsed, and died undelivered. In the case of unavoidable hæmorrhage, the patient had been bleeding for four hours, and her pulse was 130. Version

TABLE II.—*Mortality.*

Name	Age	Para	Date of Delivery.	Cause of Death	Time Ill	Remarks
			1912			
N. F.	25	I.	Nov. 21	Sepsis - - -	11 days	Manual removal
A. M'G	25	I.	Nov. 27	Sepsis - - -	13 days	—
M. M.	25	II.	Dec. 9	Sepsis - - -	10 days	—
			1913			
M. C.	30	III.	March 7	Accidental hæmorrhage - -	5 hours	Bleeding on arrival; pulseless; stimulants, infusion; vagina plugged. Patient collapsed and died undelivered
K. D.	24	I.	March 21	Sepsis - - -	17 days	—
E. C.	30	VII.	April 9	Pulmonary embolus - -	6 days	Patient septic; treated by douches, vaccines, &c. On 6th day after delivery got sudden pain in chest and died before aid could be procured
N. M'P	29	III.	Aug. 25	Unavoidable hæmorrhage -	—	Bleeding 4 hours; pulse 130; version. Collapsed immediately afterwards and died

was performed, but the patient collapsed almost immediately afterwards and died. In the case of pulmonary embolus, the patient had been treated for some form of septic infection by douches and vaccine. On the sixth day after delivery, she was seized by a sudden pain in her chest, and died before aid could be obtained. There were no other cases presenting any features of special interest in the Extern Department.

The principal event of the year was the complete renovation and re-building of the Students' Residence. This residence has had a very chequered career. It is

Intern Department.

Table III.—*Total Admissions and Deliveries.*

—	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Total
Total deliveries -	150	169	162	144	178	186	175	165	156	190	171	166	2,012
Patients admitted not in labour -	15	14	21	28	26	20	26	31	38	30	26	24	299
Total admissions	165	183	183	172	204	206	201	196	194	220	197	190	2,311

supposed to have been built some time before the Hospital, and was the town house of Lord Mountgarrat. It then passed into the hands of the Richmond Asylum for the Blind, from whom it was purchased by the Governors of the Rotunda Hospital in the year 1815. It continued as the Gynæcological Wing of the Hospital up to the year 1895, when, on the completion of the Thomas Plunket Cairnes Wing, in the Mastership of Dr. William Smyly, it was vacated by patients. The building was then handed over to the Master as a residence for Students, practically without alteration, and, with the exception of the erection of some wooden divisions to form cubicles, it remained in that state up to 1913. It has now by the kindness of the Governors been entirely renovated and made most suitable for its purpose. A large and excellent kitchen and numerous bathrooms have been added; old

bedrooms of large size, accommodating five or six or more students, have been broken up into smaller rooms ; electric light has been installed, and new furniture has been provided. The result is a most comfortable and commodious residence, for which I desire to offer thanks, on behalf of myself and my successors, to the Board of Governors.

I do not think that any change of importance has been made during the year in the conduct of the Hospital.

I will now briefly refer to the different complications of labour met with during the year in the Intern Department. Further information will be found regarding them in the tabular statements which follow.

There were twelve cases of unavoidable hæmorrhage. Three mothers died—one of pyæmia, with thrombosis of the right ovarian vein. This case will be referred to later. In the second case—one of central placenta prævia—bi-polar version was performed, but the patient collapsed immediately after. She was revived temporarily by stimulants, but died in five and a half hours. The *post-mortem* examination showed fatty degeneration of the heart. There was no hæmorrhage after the version was completed. The third death also occurred in a case of central placenta prævia at term. There had been intermittent hæmorrhage for four weeks before admission. Bi-polar version was performed, and the patient delivered herself spontaneously four hours later. There was some post-partum hæmorrhage, and the uterus was plugged. On passing a catheter, some blood was found in the bladder. Stimulants and saline infusion were administered, and the limbs were bandaged, but the patient died three hours later. The *post-mortem* examination showed that there was a tear of the cervix involving the bladder, and it is possible that the post-partum hæmorrhage came from this. Presumably it occurred during the performance of version.

It is a curious fact that there was no case of accidental hæmorrhage in the Hospital during the year, and in the previous year there had been only one case.

Table IV.—*Nature and Number of Cases Treated.*

Total admissions	2,311
Total deliveries	2,012
Primiparæ	723
Multiparæ	1,289
Presentations—	
Vertex, normal rotation	1,851
„ face to pubes	40
Face	3
Brow	2
Breech	62
Transverse	16
Twins	32
Triplets	1
Complications of pregnancy—	
Hyperemesis	1
Vesicular mole	1
Hydramnios	6
Abortions and miscarriages	70
Hæmorrhages—	
Unavoidable	12
Post partum	9
Lacerations of genital tract—	
Perinæum	479
Cervix (serious)	2
Contracted pelvis	24
Placental abnormalities—	
Adherent	26
Prævia	12
Battledore	1
Circumvallate	2
Succenturiate	2
Abnormalities of cord—	
Velamentous insertion	2
Prolapse	13
Accidental complications	
Phthisis	1
Myomata of uterus	1
Œdema of vulva (renal)	2
Cardiac Disease	2
Pneumonia	2
Rheumatoid arthritis	1
Goitre	2
Accidental complications—*con.*	
Parotitis	1
Prolapse of cervix	1
Acute inversion of uterus	1
Eclampsia	5
Crural phlegmasia	1
Mastitis	4
Insanity	2
Operations—	
Pelvimetry	17
Induction of labour and miscarriage—	
for hæmorrhage	2
„ toxæmia and dead fœtus	6
Incision of cervix	2
Episiotomy	10
Impacted shoulders	3
Suture of perinæal lacerations—	
Complete	1
Incomplete	478
Suture of cervical lacerations	2
Forceps	64
Version	26
Cæsarean Section—	
Abdominal conservative (classical)	7
Pubiotomy	3
Craniotomy	4
Decapitation	4
Evisceration	4
Manual removal of placenta	26
Ligature of ovarian veins	1
Excision of thrombosed ovarian vein	1
Supra-vaginal hysterectomy	2
Morbidity (B. M. A. standard)—	
Average	1 in 16.45
Percentage	6.07
Mortality—	
Total	11
Average	1 in 210
Percentage	0.47

TABLE IV.—*Nature and Number of Cases Treated.—con.*

Infant statistics—		
Total births		1,909
Alive		1,831
Dead—		
Premature	26	
Full term—		
Recent	35	
Macerated	17	
	—	78
Children born alive who died in hospital		49
Total born dead or died in hospital		127
Fœtal abnormalities—		
Ascites		1
Anencephalus		1
Cleft palate		1
Congenital syphilis		5
Hydrocephalus		4
Spina bifida		4
Talipes		7
Fœtal abnormalities—*con.*		
Congenital occlusion intestine		1
Congenital absence one hand		1
Exomphalos		1
Hare lip		3
Pes calcaneus		2
Hypospadias		2
Supernumerary toe		1
Infantile complications—		
Cerebral hæmorrhage		1
Cephalhæmatoma		2
Fractured clavicle		2
Imperforate anus		1
Severe icterus		3
Melæna		4
Ophthalmia		7
Parotitis		1
Secondary hæmorrhage cord		1

TABLE V.—*Pelvic Presentations.*

Para	Total	Dead Children		Remarks
Primiparæ	24	Recent	2	Six occurred in twin pregnancies
		Macerated	1	One was associated with prolapse of the cord
			—	One associated with spina bifida
		Total	3	One case associated with maternal death (see Table)
Multiparæ	38	Recent	6	Five occurred in twin pregnancies
		Macerated	3	Three were premature
			—	One associated with eclampsia
		Total	9	One occurred with triplets
			—	One associated with prolapse of cord
Totals	62	Total	12	One occurred with fractured clavicle

TABLE VI.—*Twins.*

Both males	9
Both females	12
Male and female	11
Total	32

TABLE VII.—*Unavoidable Hæmorrhage*

Name	Age	Para	Variety	Period of Pregnancy	Initial Presentation	Result to Mother	Result to Child	Treatment and Remarks
M. M.	26	II.	Lateral	Term	Transverse	Recovered	Dead	Bi-polar version ; child born 1¼ hours later
A. H.	29	II.	,,	,,	Vertex	,,	,,	Bi-polar version ; child born 6½ hours later
K. W.	23	II.	,,	,,	,,	Died	Alive	Bi-polar version ; child born 4¼ hours later ; became septic with thrombosed ovarian veins ; operation ; death. See Mortality Table
R. M.	30	II.	,,	,,	Transverse	Recovered	Dead	Incision of cervix ; bi-polar version ; evisceration ; perforation of head ; membranes ruptured before admission and uterus tight on child ; contraction ring 3″ above cervix ; version only possible after evisceration and amputation of arms.
L. N.	30	II.	Central	8 months	Vertex	,,	,,	Bi-polar version ; child born in 3 hours.
K. C.	41	XIII.	,,	Term	,,	Died	—	Sent from country with vagina plugged ; easy version ; pulse 120 ; ten minutes later patient collapsed, then rallied, but died in 6 hours. See Mortality Table

TABLE VII.—*continue l.*

Name	Age	Para	Variety	Period of Pregnancy	Initial Presentation	Result to Mother	Result to Child	Treatment and Remarks
A. L.	39	XII.	Marginal	Term	Vertex	Recovered	Alive	Bi-polar version; child born 9½ hours later
K. B.	22	II.	Lateral	,,	Transverse	,,	Dead	1st labour pubiotomy; bi-polar version
A. C.	32	VIII.	,,	,,	Vertex	,,	Alive	Admitted in labour; membranes ruptured
A. D.	27	IV.	,,	,,	,,	,,	Dead	See Table VIII.
J. F.	35	I.	,,	,,	,,	,,	,,	Internal version; child born in 1½ hours
J. M.	38	VI.	Central	,,	,,	Died	,,	Bi-polar version; intermittent hæmorrhage 4 weeks before admission; os 2 fingers; spontaneous delivery 4 hours after version; P.P.H.; uterus plugged and replugged; ernutin; pituitrin; salines; stimulants; bandage on limbs; oxygen; died 3½ hours after delivery. See Mortality Table

There were twenty-four cases of contracted pelvis during the year. In four cases delivery was spontaneous. In five cases the forceps was applied, and delivery effected. In two cases, internal podalic version was performed. In one case, the child was extracted as a breech presentation. In seven cases, Cæsarean section was performed, and in three cases pubiotomy was performed. Two patients, I regret to state, died after Cæsarean section, and both of septic infection. In one case of pubiotomy, the piece of bone between the saw-cut and the symphysis came away during the puerperium. It is interesting to note that this occurrence made not the smallest difference to the patient's power of walking. If anything, she walked better, and at an earlier date, than do the average number of pubiotomy patients. I think that her case effectively disposes of the idea that want of union of the saw-cut through the bone is sufficient to interfere with the power of locomotion. This patient subsequently delivered herself spontaneously in the hospital.

There were thirteen cases of prolapse and presentation of the cord. Five children were born alive, and eight were born dead.

There were only five cases of eclampsia during the year. All the mothers recovered, and four children out of six were born alive. One patient had fourteen fits before labour, and one after labour. The treatment of eclampsia has been continued on the lines instituted by my predecessor, Dr. Hastings Tweedy.

The forceps was applied in sixty-four cases. All the mothers recovered, and fifty-four children were born alive.

As has been already mentioned, Cæsarean section was performed seven times, in every case the indication being contracted pelvis. In three cases Cæsarean section was performed for the second time, and in one case for the third time.

The morbidity rate of the Hospital, as estimated by the standard of the British Medical Association, was 1 in

16.45, being a somewhat higher rate than in the previous year, when it was 1 in 18.06. I was rather surprised by these figures, as, from my knowledge of the cases, I thought that there was a considerably reduced morbidity rate. Why I should have thought this is very obvious, if one compares the table showing the treatment of morbid cases of genital origin in the past year with similar tables in the report of the previous year. Such a comparison shows that while in the year ending October, 1912, eighty-five patients required utero-vaginal douching, during the past year only thirty-eight patients required douching. Further, in 1912, forty-seven patients received injections of vaccine, and only twenty-five patients in the past year. The number of douches given to any one patient also materially differs in the two years. Thus in 1912, thirty-four patients received one douche, while fifty-one patients had more than one douche. During the past year thirty patients had one douche and only eight patients had more than one douche. I think that these figures show that the character of the morbidity in the past year was very much milder than in the preceding year.

During the year my assistants have tested systematically and carefully the action of pituitary extract on the uterine contractions. They have embodied the result of their work in a communication which appears elsewhere. Tables appear in the Appendix to this Report to show the results they obtained, and their conclusions are as follows:—

(1). Pituitary extract undoubtedly increases the strength of the uterine contractions.

(2). The strengthened contractions maintain their physiological character.

(3). The best results are obtained when the extract is given during the second stage.

(4). Its use reduces the number of forceps operations, with consequent lessening of morbidity.

(5). It is perfectly safe for the mother, and at least as safe as the forceps for the child.

(6). It gives improved results for both mother and the child in placenta prævia, when used in combination with bi-polar version.

(7). It does not affect the normal course of the puerperium.

(To be continued.)

ART. III.—*The Ætiological Controversy anent Beri-beri, with some Remarks as to Milled Rice.* By HOWARD D. KING, M.D., New Orleans, Louisiana, U.S.A.

BERI-BERI—a peculiar nervous malady, and a disease known to the Chinese two hundred years before the advent of the Nazarene, and one which considerably worried the Roman troops in Arabia under Ælius Gallius during the height of the Cæsars—is to-day as completely shrouded in ætiologic mystery as ever. And, although the latest observations of a score of investigators have thrown some light upon the disease, and the literature has attained voluminous proportions, we are still far from any definite conclusions as to its genesis or the causes that underlie it.

No other disease has provoked more discussion among scientists than beri-beri. Many theories have been put forward by investigators in all parts of the world, and none have stood either the test of time or of critical analysis. The older writers attributed the disease to atmospheric disturbances. Latter-day observers, in explanation of the disease, advanced chemical causes, such as arsenical, oxalate, and carbon-dioxide poisoning, all of which have since been abandoned. Food, in every manner, shape, and form, has been incriminated. Animal theories are legion. Insects, bugs, worms, germs and fungi have been held responsible for the disease. Even the hookworm and body louse have not been allowed to escape indictment.

Rice as an alleged causative factor in the production of beri-beri has been known many years. The rice theory as

to the causation of the disease has been given decided impetus by recent investigations in the Far East, particularly those conducted by research workers attached to the various military services of the United States Government. At the different periods in which rice has been heralded by scientists as the cause of beri-beri, the grain is always incriminated in a different manner. It will be well, at this juncture, to recount the various indictments against rice as a cause of beri-beri. They are as follows :—

(1) Deficiency of nitrogen.
(2) Deficiency of fats.
(3) Deficiency of phosphorus.
(4) Deficiency of amido acids.
(5) Deficiency of amido nitrogens.
(6) Mouldy rice.
(7) Germ in the rice.
(8) Improperly stored rice.

Notwithstanding that each and every one of these theories relative to rice have been absolutely refuted, the rice theory, for some reason or another, still remains predominant, and, like Banquo's ghost, "will not down." In connection with rice as a cause of beri-beri, exponents of the rice theory fail to explain the existence of the disease in those places—Brazil, Cuba, and the Moluccas—where rice is not consumed, or even known as a food. In Cuba molasses is supposed to be the cause; in Brazil the culpable agent is held to be unknown; but it can be emphatically stated that it is in nowise due to food. In the last-named country the disease occurs as frequently in the wealthy and well-nourished upper classes as it does in the poverty-stricken peasantry.

In fowls, the disease, presumably beri-beri, has been produced by feeding with sago, tapioca, cream of wheat, flour, potatoes, macaroni, corn grits, and molasses. The validity of experimentally produced beri-beri in fowls has, however, recently came in for just criticism. Several investigators assert there exists no clinical or pathological resemblance between *Polyneuritis gallinarum* and the

beri-beri in man, while others, with equal emphasis, declare the conditions analogous. With the single exception of experiments on condemned prisoners in the Philippines there has been but little attempt to produce the disease in man. These experiments were in no instance conclusive or satisfactory as to rice being the only ætiologic factor in the production of beri-beri. Complete verification with human material is, however, the only way in which scientific scepticism and doubt can be removed.

Whenever the defenders of the rice theory are pressed hard or closely as to the correctness of their views they immediately fall back upon the *exclusive diet* of rice as a cause of the disease. Mixed animal and vegetable food must be regarded as the diet of all mankind, despite the restrictions of country, climate, or race. In the evolution of man from the earliest geological periods to the present day, there is distinct evidence of man seeking a mixture of foods. The First Book of Moses, Genesis, offers evidence as to a mixed diet being considered necessary for both man and animal.

> "And God said, Behold, I have given you every herb bearing seed, which *is* upon the face of all the earth, and every tree, in the which *is* the fruit of a tree yielding seed; to you it shall be for meat."—C. 1, 29.
>
> "And to every beast of the earth, and to every fowl of the air, and to every thing that creepeth upon the earth, wherein *there is* life, *I have given* every green herb for meat: and it was so."—C. 1, 30.

However, the rice theorists, in their endeavours to ascertain the cause of the disease, have opened up new and important avenues of inquiry, and at the same time exculpated rice as a disease-producing grain. To-day we know that the anti-beri-beritic substance, whatever it may be, is most irregularly distributed among foodstuffs. Experiments have conclusively demonstrated that beri-beri in fowls can be produced by ten or more common ordinary every-day foods. This line of research has apparently opened the way for the ætiologic solution of beri-

beri from a physiological and chemical point of view. Unfortunately, many scientists working along chemical and physiological lines have restricted their experimentations solely to rice, and for that reason the results of their scientific labours cannot be considered as very conclusive or telling. It has also been demonstrated that the process of milling and coating to which rice is subjected before being offered to the trade has nothing whatever to do with the disease. What the chemical substance is or what the elemental food deficient is that actually produces beri-beri research workers are not prepared to say; nor do they as yet know what foods are endowed with anti-beri-beritic properties.

One fact stands out boldly amid the chaos of ætiological inquiry—namely, that beri-beri is no longer to be classed in the domain of Tropical Medicine.

But the involvement of other foodstuffs besides rice as a cause of beri-beri when used as an exclusive diet, seems to indicate that the condition is primarily one of defective metabolism superinduced by some dietetic deficiency. The remarkable revelations respecting the alleged causative agencies in the production of beri-beri have served more than anything else to direct attention to deficiencies in the diet as an underlying ætiologic feature in certain types of disease. By deficiency is not meant gross lack of energy-yielding substances—of calories represented by proteïn, fat, and carbohydrate. Starvation, whether complete or partial, need not be regarded as something physiologically unique. The new theory of a deficiency factor instead of a toxic substance or an invading organism in the conception of a certain group of diseases has unfortunately swung the pendulum too far in the case of beri-beri. It is also unfortunate that our knowledge regarding the chemical nature of these essential components of the dietary are so meagre and conflicting. These dietetic essentials are termed "vitamins." As to "vitamins" our knowledge is rather hazy, save that they are widely distributed in nature and are also susceptible of alternative changes. Of

striking importance is the fact that a food of high or low proteïn value does not exert any material influence in the causation of beri-beri.

As to a germ not being the causal agent of the disease, we cannot afford to be too dogmatic, in view of the opinions of such authorities as Manson, Scheube, and Tsuzuki, and some of the present-day workers.

It is a well-known physiological axiom that for the maintenance of health a proper combination of alimentary principles is absolutely necessary. An exclusive proteïn diet or an exclusive carbohydrate diet would be contrary to all laws of Nature. If man is to enjoy health, and be in a state of physical and mental efficiency, it is necessary that his food be mixed. It is evident that an excess of any particular nutrient material must necessarily impose on the organs of the body additional labour in securing their elimination. Therefore, the question of exclusive rice diet, or, for that matter, any exclusive diet, even corn, wheat, or rye, is not to be advocated.

Time has not erased from memory the "pellagra and corn scare." It seems but yesterday that Indian corn was on all sides being assailed as a most pernicious foodstuff and the cause of pellagra. Pellagra became highly prevalent, or at least just recognised as correctly diagnosticated, throughout the Southern States. After searching around for the cause of pellagra the maize theory of the disease was revived, and for a short time met with general acceptance. But the geographical distribution of the disease did not correspond with the corn-eating people, and thus doubt was created in the minds of certain investigators as to corn having any bearing whatever on the cause of pelagra. Then came a scientific renaissance, and the corn theory was abandoned. Following the corn theory of pellagra the fly had a brief ætiological connection with the disease.

Medical research workers have two weighty ætiological problems awaiting solution—one is beri-beri, the other pellagra. The formulation of tentative hypotheses must

not, however, make us oblivious of the persistent shortcomings of our knowledge in this new and interesting field. Food in its relation to disease possesses such interest for the writer that I trust I will be pardoned for wandering so far afield from the main discussion—beri-beri and rice.

There are many who protest against the milled or polished rice, and advocate the use of the brown or red rice. This leads up to the question why is rice milled instead of being sold in its brown or red state. It will be well to briefly recount some of the most important objections against brown or red rice. Rice in its brown or red state is porous and holds dirt, and, therefore, may be considered an insanitary or unclean food product. It would also gather mould or fungi, and soon turn rancid and sour. Rice in this crude state would spoil very quickly under the most ideal of climatic conditions. Weevils also would quickly invade the grain and lower its value and impair its food qualities.

Now, that we see brown or red rice has certain disadvantages, it is necessary to say something of milled rice. Even with food there is an æsthetic side, and a milled or polished rice is far more pleasing to the eye and palate than a smudgy, pasty, gluey mass of brown or red rice. But the principal reason for the milling and coating of rice is that the process protects the grain from undergoing spoliation. The argument has been advanced by some food specialists that glucose and talc are injurious to health, but this is not so, as the talc is removed by the washing of the rice preparatory to boiling or steaming. The amount of talc used in the coating of rice is well nigh infinitesimal. No objection can legitimately be raised as to glucose, as it is a food of highly recognised value from every viewpoint. Cures of beri-beri in fowls by large doses of glucose have been reported. The use of paraffin for the purpose of adding gloss and lustre to the rice grain has been discontinued. However, I cannot but call attention to the fact that in surgical literature much space is devoted to the treatment of facial deformities by paraffin injec-

tions; and, in its liquid state, it is highly recommended as a non-absorbable intestinal stmulant.

It is claimed, by some, that rice on account of having a few proteïn percentages, is not as valuable a foodstuff a- other grains, such as maize, wheat, and barley. The deficiency of proteïn in rice as compared with the grains just mentioned is more than amply compensated by the rate of proteïn absorption from rice when it reaches the intestinal tract. Rice may have less proteïn than either wheat, maize, or barley, but a greater percentage of proteïn is absorbed by the human economy from rice than any other grain. For example, the percentage of proteïn in rice varies from 8 per cent. to 9 per cent., while wheat contains from 11.4 per cent. to 13.8 per cent.; but in rice the percentage of proteïn absorbed is from 80 per cent. to 86.4 per cent., while in wheat the percentage of absorption ranges from 62.8 per cent. to 73 per cent. The absorptive differences are apparent. The following table might prove of interest :—

	Amount of Proteïn. Per cent.	Proteïn Absorption. Per cent.
Rice	8 to 9	80 to 86.4
Wheat	11.4 ,, 13.8	62.8 ,, 73
Maize	11.50 ,, 11.70	74 ,, 81.8
Barley	10.5 ,, 10.35	59.8 ,, 61
Sorghum	8.72 ,, 8.80	53 ,, 53.60

That rice stands high in food value is evident from the recent reports as rendered by the United States Department of Agriculture :—

Rice	86.09
Maize	82.97
Rye	82.79
Wheat	82.54
Oats	74.02
Fat Beef	46.03
Lean Beef	26.83
Potatoes	23.24

Recent nutritive investigations by the same governmental department show that rice also ranks high in caloric or heat-producing value. The heat value of rice is

1720, which is very high Below will be found a table of the heat value of rice as compared with other food stuffs.

	Calories
Sugar	1860
Wheat	1750
Rice	1720
Oats	1720
White Bread	1215
Corn Bread	1205
Beef Steak	1130
Green Corn	500
Potato	385
Breakfast Food (Oat)	285

The time is, indeed, ripe for an expedition to Brazil or any other endemic centre of beri-beri, for the purpose of investigating, thoroughly and accurately, the disease at first hand. An expedition of this character should have for its object the closure of every avenue of ætiologic doubt, thus simplifying the work of research and limiting the field of investigation to something definite and tangible. As it is to-day, a score of investigators are working on the ætiology of beri-beri—and all to no purpose. It may be stated with emphasis that the cause of beri-beri is unknown.

LITERARY NOTE.

In view of the great interest awakened in the surgical world by the researches of Professor Crile, of Cleveland, on shock, the profession will welcome the forthcoming new work on anoci-association by Professor Crile and Dr. W. E. E. Lower, Assistant Professor of Genito-Urinary Surgery, Western Reserve University. The authors first discuss shock—its kinetic theory, its histological and clinical pathology, and its treatment. Then follow chapters on the principles of anoci-association, the technique of its application in the administration of the anæsthetic, in abdominal operations, in gynæcological operations, in genito-urinary work, in operations for cancer, for exophthalmic goitre, on the brain and on the extremities. The book will shortly be issued from the Press of W. B. Saunders Company.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Practice of Medicine. By Frederick Taylor, M.D., F.R.C.P., Consulting Physician to Guy's Hospital, the Evelina Hospital for Sick Children, and the National Hospital for Diseases of the Heart; Physician to the Seamen's Hospital, Greenwich; late Examiner in Medicine at the Universities of Cambridge, of London, of Durham, of Birmingham, and of Belfast, and to the Royal College of Physicians, London. Tenth Edition. London: J. & A. Churchill. 1914. Demy 8vo. Pp. xvi + 1192.

This ever popular text-book on Medicine well maintains its reputation in the present tenth edition. The new subjects are: Rat-bite Fever, Sand-fly Fever, Psittacosis, Madura Foot, Sporotrichosis, Friedländer Pneumonia, Congenital Coarctation of the Aorta, Diseases of the Pituitary and Pineal Glands, Obesity, Granuloma Annulare, Folliclis, and Blastomycosis.

There has been a considerable rearrangement of the contents of the work. Acute infectious poliomyelitis now finds an appropriate place among the infectious diseases. It is to be regretted that pneumonia has not similarly been transferred—we mean, of course, pneumonic fever, which Dr. Taylor still calls "croupous pneumonia," or "acute lobar pneumonia." Surely at this time of day all must admit that it is an infective and infectious disease, precisely analogous to enteric fever. In this connection the brief observation of "Friedländer pneumonia" at page 543 is interesting; but to differentiate an acute pneumonia caused by Friedländer's bacillus from an ordinary pneumococcus attack savours rather of hair-splitting, to our mind—more particularly in view of the

author's statement that "the bacillus of Friedländer may be accompanied by the pneumococcus."

The work is much more fully illustrated than were the earlier editions. In the first issue, published in 1890, there were only twenty-six illustrations in the text: there are now seventy-one. In addition, twelve plates show twenty-one skiagrams of the chest, heart, and abdomen, of which all but three are new. For the skiagrams the author expresses his acknowledgments in the preface to Dr. A. C. Jordan, medical radiographer to Guy's Hospital and to the Royal Hospital for Diseases of the Chest.

It gives us pleasure to state that this is one of the best text-books on Medicine we have ever met. It is clearly written, contains just what a student or young practitioner requires to know from a clinical and practical standpoint, and affords a safe guide to treatment in its varied and various aspects.

The Practical Medicine Series: Comprising ten volumes on the year's progress in Medicine and Surgery. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Vol. IX.—Skin and Venereal Diseases; Miscellaneous Topics. Edited by W. L. BAUM, M.D., and HAROLD N. MOYER, M.D. Series 1913. Chicago: The Year Book Publishers. Demy 8vo. Pp. 228.

THE ninth volume of the Practical Medical Series is one of ten issued at about monthly intervals, and covering the entire field of Medicine and Surgery, each volume being complete for the year prior to its publication on the subject of which it treats. The Practical Medical Series is published primarily for the general practitioner; at the same time the arrangement of the several volumes enables those interested in special subjects to buy only the parts they desire. Volume IX. consists of two sections. The first relates to Skin and Venereal Diseases, by W. L.

Baum, M.D., Professor of Skin and Venereal Diseases, Chicago Post-Graduate Medical School, and the second to Miscellaneous Topics, by Harold N. Moyer, M.D. Both these gentlemen have had continued experience in preparing the texts contained in the ninth volume of the Practical Medical Series, and, as a consequence, have succeeded in compiling an exceedingly complete and useful record of the work accomplished throughout the medical scientific world during the year 1913.

In view of the wide spread epidemic of measles existing in Dublin this spring, we specially note the reference made to Dr. J. R. Trist's communication on Measles and the Mouth, published in the *British Medical Journal*, but not on the date (Sept 9, 1913) mentioned by the editor. In this communication emphasis is laid upon the need of keeping the patient's mouth as clean as possible, by wiping not only the tongue and palate with swabs dipped in borax or thymo-glycerin, but more especially the inside of the cheeks and labial surface of the gums. "Every case of measles with severe complications (whether of a broncho-pneumonia or diarrhœa) has presented a mouth of exceeding foulness. Since the adoption of routine cleansing of the mouth, no case brought under treatment within twenty-four hours of the appearance of the rash has had a fatal termination." This seemingly obvious piece of information, that the mouth should be kept as clean as possible, is in consequence of its importance, whether in measles or any other disease, or even in apparent health, worthy of repetition both in and out of season. We may here be pardoned, perhaps, for reminding those of our readers who have unsuccessfully exercised their most ingratiating and persuasive abilities in coaxing their obdurate little patients to open their mouths for examination, not to mention such disinfecting procedures as are described above, and exemplified in the childish mind by a horrible mop to be relentlessly packed into its mouth, that a most excellent and efficient method of disinfecting the mouth and throat is to give the child a formamint tablet placed in a moistened muslin bag. The reason for

the bag of muslin is, of course, to prevent the aforesaid greedy little patients bolting the formamint too rapidly, for as a class they seem to regard these tablets as bonbons.

In the second portion of the book before us such miscellaneous subjects as Medical History, Medical Economics, Sociology, and Eugenics are intelligently presented in an interesting manner for the reader who desires a brief, but sufficient exposition on these topics.

The chapter on Correct Bibliographic Style, though good, is only referred to here as an excuse for saying that in Annuals of the kind before us it is imperative that correct references to the sources from which extracts in the general text are taken, should be accurate, and not as in the instance mentioned above in connection with Trist's paper on Measles and the Mouth.

Under the heading of "The Trinity of Social Ills," adherent clitoris is mentioned as a cause of masturbation, hysteria, and mental defects predisposing to prostitution. It is recommended that every child should be examined for such defects and have them corrected, if possible. If by "adherent clitoris" and "corrected" it is intended to imply analogous conditions to a tight fore-skin in a male and circumcision, we confess we have never observed the developmental abnormality described.

We are, of course, familiar with the inclusive and erudite publication entitled "Normal Ovariotomy, Female Circumcision, Clitoridectomy, and Infibulation" which appeared on December 7th, 1907, in our contemporary the *New York Medical Journal*, and afterwards in pamphlet form, its author being our distinguished and learned colleague, Dr. John Knott of this city. In this article various physiological peculiarities and artificial developments of the external genitals of eastern and southern women are described as well as the more curious "operative" procedures and weird fashions existing amongst these several people. Yet we take it the operation described as circumcision and pertaining to girls is not that of circumcision as we understand it, and certainly not for adherent clitoris.

It must be acknowledged, however, that occasionally references are made in medical literature to adherent clitoris. The best observers do not mention the condition, and are quite sceptical in respect to the tradition that amputation (seemingly confounded with circumcision in eastern countries, &c.) of the organ has any beneficial effect in preventing unnatural sexual excitement. The late eminent Master of the Rotunda Hospital, Dr. Hastings Tweedy, states that the operation popular twenty years ago was a disgrace to the profession.

There are also allusions in the book to the National Insurance (Health) Act, and of a Bill to be introduced in one of the States in America for the prevention of venereal diseases. All these are most interesting and suggestive. The editors are to be congratulated on the very complete and exhaustive compilation they have succeeded in making. S. S.

Health. By MILDRED M. BURGESS, M.D. With some Original Illustrations by ELEANOR M. CARTWRIGHT. London: H. K. Lewis. 1914. Cr. 8vo. Pp. viii + 175.

AN excellent little book, consisting of slightly expanded lecture notes, and one which will be found suggestive and helpful by those who have to lecture on health subjects. As a rule the information given is accurate, and covers most of the ground, but there are a few points needing correction.

Whilst the account of infectious diseases is good, the author fails to point out that measles is infectious before the rash appears, and that, when measles is prevalent, no child with catarrhal symptoms should be allowed to remain in school.

In the drawing of a "Simple Method of Distillation," the kettle represented is an ordinary one with the entrance to the spout below water level. A rapid blowing out of boiling water would be more likely to occur than distillation!

Dark paint, recommended as it "avoids finger marks showing," is hardly hygienic advice; surely white paint and clean off the finger marks would be better.

"Soda water contains no soda at all" is another statement requiring revision, as it has been decided under the Adulteration of Food Act that aërated waters without added soda may not be sold as soda water.

The Practice of Pediatrics. By CHARLES GILMORE KERLEY, M.D.; Professor of Diseases of Children in the New York Polyclinic Medical School, &c. &c. Philadelphia and London: W. B. Saunders Company. 1914. 8vo. Pp. 878.

WE welcome this volume as a very excellent exposition of the teaching of the American school of pædiatrics. Although we have many works written by members of the profession in the States, there is still room for a book which contains many original pieces of work, and strikes out a new line for itself.

The book is a large and comprehensive one of over 800 pages. In the main it follows the general plan of text-books of children's diseases, beginning with the new-born child and its diseases, feeding, milk, &c. Then follow diseases of the alimentary, respiratory, and excretary tracts. After this comes a brief but concise section on nervous diseases, among which are included (rightly or wrongly) acute anterior poliomyelitis and cerebro-spinal meningitis, and then follows an account of the "transmissible diseases." So far the book adheres to the general plan, but after this we find a chapter entitled "Unclassified Diseases," which includes such varied types as acute rheumatism and dwarfs, while heredity, obesity, hernia, and many other odds and ends are included under "Miscellaneous Subjects"!

The last three chapters are almost the best and most original in the book—*i.e.*, General Management, Therapeutic Measures, and Gymnastic Treatment. This last deserves particular mention, comprising as it does a full

description of the remedial exercises for nearly all the complaints mentioned in the text, and being rendered still more valuable by a series of excellent photographs.

The illustrations in the book are good, but in the chapter on skin diseases regrettably scanty. Particular notice should be taken of a section of the chapter on nutrition entitled Starch Feeding. It contains the results of some most interesting experimental work carried out by the author investigating the power of the newborn infant to digest starch, and it proves that many of our earlier ideas on this subject were wrong.

For us, of course, the book suffers from being rather American. Their problems are not ours, and ours are not known to them. Partly for this reason the diet sheets vary very much from what is usual in this country; for while we find a child of six to nine months is given only 6 to 8 ozs. of a half and half milk and barley water mixture, at two years' old we are told we may give him hashed chicken for breakfast and rare beefsteak for dinner, only being warned that when (under six years) he has a chop for breakfast, he should only have poultry or fish for dinner!

These, however, are only minor matters, and either the specialist or the general practitioner will find the book of real value to him in his work.

Massage, Manual Treatment, Remedial Movements, History, Mode of Application, and Effects; Indications and Contra-indications. By DOUGLAS GRAHAM, M.D., Consultant and Instructor in Massage, Boston, Mass.; Member of the American Association for the Advancement of Science; of the American Medical Association; the Massachusett's Medical Society, &c. Fourth Edition, revised and enlarged. Seventy-five Illustrations. Philadelphia and London: J. B. Lippincott Co. 1914. Large 8vo. Pp. xiv + 574.

IN the preface to this, the fourth edition, the author says the book is largely a record of his personal experience,

combined with that of the best writers and practitioners of massage both in America and in Europe. It partakes both of the nature of a text-book and a reference hand-book at one and the same time. It would appear, however, not to be sufficiently systematic for a text-book ; many of the subjects are treated in a somewhat sketchy manner, and though a person who had already learned and practised massage for some time might be interested, and possibly obtain some useful information, yet a student desirous of definite descriptions and information might search in vain.

The book begins with a very full and interesting history of massage from the earliest up to the present time. This occupies some forty pages, and is followed by about sixty pages describing the physiological effects of massage and its influence on the various structures of the body. In the chapter on massage of the internal organs there is a report of two hundred and thirty-nine cases of the effect of massage on the uterus and its surroundings ; and in the chapter on massage in writers' cramp and allied affections there is a report of two hundred and eighty-five cases.

The treatment of deformities is only briefly touched on, many common ones for which massage is often used not being mentioned at all : and massage for recent fractures is dismissed in six and a half pages.

There is a special chapter at the end of the book on massage of the eye by Dr. A. Darier, of Paris, who says there are several causes at work in the amelioration of the sight by massage :—(1) Mechanical action as regards the zonule and the crystalline lens : (2) tonic action upon the ciliary muscle and the accommodation : (3) trophic action (circulatory, secretory, and excretory) upon all the intra-ocular tissues and liquids, ciliary glands, choriocapillaris, retina, &c.

The book is well illustrated : most of the pictures are taken from photographs showing the position of the hands in various movements.

The subject of pathology receives very little notice, many conditions are mentioned without any reference to either their ætiology or pathology: this is all right for a qualified

doctor who reads the book, or for one who has already studied massage in other text-books, but is disappointing for anybody who may get the book expecting to learn all that they require from it. The interest of the book is greatly enhanced by short accounts of cases of various kinds treated by the author.

Another point that might be more generally followed is the practice of acknowledging in the text or in a footnote the source of information obtained from numerous authors, instead of merely referring to them collectively in the preface. On the whole the book deserves a cordial welcome, and may be strongly recommended to both medical men and masseurs alike.

RECENT WORKS ON ANÆSTHETICS.

1. *Modern Anœsthetics.* By J. Frederick W. Silk, M.D. (Lond.). London: Edward Arnold. 1914. 8vo. Pp. xii + 200.

2. *Anœsthetics: their Administration.* By Dudley Wilmot Buxton, M.D., B.S. Fifth Edition. London: H. K. Lewis. 1914. 8vo. Pp. xiv + 477. Eight Plates.

1. Considerable progress has been made in recent years in the study of surgical anæsthesia, both from the purely scientific side as well as from the clinical. As a result the anæsthetist of to-day is not only armed with many new methods, but a degree of precision has been given to those methods formerly in use, that has made them safer for the patient and more satisfactory for the operator. With regard to the improvement in the older methods the advance has been wholly a gain, for, though the accuracy in dosage of the drugs and the increased safety of the patient has been attained only by some sacrifice in the simplicity of the methods used, still the advantage is not to be gainsaid. With regard to the newer methods, many of them are still on their trial, and one hesitates to pronounce a final judgment on their merits till further experience has proved or disproved their worth. In spite

of all this advance in our knowledge the administration of an anæsthetic to a patient remains to-day mainly an art, and as an art can be learned only by practice. In saying this we do not for one moment wish to depreciate the value of scientific study for the anæsthetist, or of its importance for his subject, but merely to emphasise the fact that success will depend on his continued and intelligent practice in administering anæsthetics.

Of the works before us one is new—that of Dr. Silk—while the other is an old friend in the new dress of its fifth edition. Dr. Silk's work is essentially a practical text-book for the student, or junior practitioner, who wishes to study the broad outlines of the simple methods in order to enable him to gain that experience which will fit him for the more difficult task that is before him if he wishes to become a skilled anæsthetist. On the whole these simple methods are well and clearly described and the indications for their use are pointed out. We should like, however, to enter a protest against the teaching of the following statement :—"There is no better method of administering chloroform than by allowing it to fall drop by drop upon some permeable material held over the patient's mouth"—even though the administrator has average intelligence, is fully alive to his responsibilities, and is willing and able to exercise a reasonable amount of care. That anæsthesia has been and can be induced well and safely in this way is undoubted, but to teach that there is no better method seems to us to be subversive of all modern progress in the subject. If students are to be taught to administer chloroform at all surely we might expect that they should be taught to administer it in the way that has been proved to be the safest and not that which is most dangerous. The skilled anæsthetist may feel quite safe with his drop bottle and his Skinner's mask, but would he like to hand these to a beginner if he himself were to be the patient ?

2. Dr. Buxton's work is much more pretentious than that of Dr. Silk, and aims at teaching not only the practice, but also the science of the subject. The changes that have

taken place in the last seven years, since the fourth edition was issued, have necessitated considerable alterations in the present edition, and Dr. Buxton has taken the opportunity of embodying in the new work most of what is good in the modern work on the subject. In this respect we know of no English text-book of anæsthetics which gives anything like so good an account of the modern methods of administering anæsthetics.

With the author's judgment on these methods we are not always in accord. Notably is this the case in his judgment on the nasal administration of nitrous oxide gas for dental operations. The method is not always applicable, but when it is applicable we believe that not only is it much more pleasant for the patient, but that it is also much more safe than the ordinary mouth method.

Differences of opinion are, however, inevitable, and on the whole we have nothing but praise for Dr. Buxton's admirable work.

The Practice of Obstetrics. By J. CLIFTON EDGAR, Professor of Obstetrics and Clinical Midwifery in the Cornell University Medical College. Fourth Edition. London: Henry Frowde & Hodder & Stoughton. 1913. Royal 8vo. Pp. xxii + 1062.

WE owe Professor Edgar an apology for the delay in reviewing the new edition of his most valuable work. It is now so well known that detailed description of it is wholly unnecessary, and one need only refer to the alterations that have been made in it. As a whole the entire book has been revised, while the pathology of the various subjects has been largely rewritten. New matter has been added, dealing with blood-pressure observation, anæsthesia in labour, vaccine and serum treatment of sepsis, pelvimetry, extra-peritoneal Cæsarean section, and hæmorrhage of the newly-born, besides other subjects. Some of the older illustrations have been redrawn, and a considerable number of new ones have been added. There are a few points here and there that call for comment. Thus, we do not know that it is correct to say that

most operators adopt the technique of Döderlein in performing pubiotomy. Personally, we always adopt Bumm's procedure, and as it is simpler than Döderlein's, we think that most other operators adopted it also. The ocetis and the crotchet are curious old obstetrical instruments, but we do not know that they should find a place in a modern work. We cannot agree with the author's conclusions on the treatment of eclampsia, particularly when he states that *post-partum* eclampsia has a low mortality rate. We cannot find any mention in his article of the treatment recommended by Stroganoff or of the treatment adopted at the Rotunda Hospital, and yet we think that these two lines of treatment have given so far considerably the lowest maternal mortality.

We congratulate Professor Edgar on his work, which we are sure will worthily maintain the high reputation possessed by its predecessors.

The British Journal of Surgery. E. W. Hey Groves (Bristol), Editorial Secretary. Vol. I. July, 1913, to April, 1914. Nos. 1 to 4. Bristol: John Wright Sons, Ltd.; London: Simpkin, Hamilton, Kent & Co., Ltd.

A long felt want of the surgeons in the British Isles has been a special journal devoted to pure surgery. The *British Journal of Surgery* promises to supply this want, and the distinguished list of directors drawn from all parts of the Empire inspires confidence as to the permanent character of the new venture. The articles are all well written, well printed, and evidently well thought out; in fact they set a very high standard of excellence. It is quite evident that not only as part of all surgeons' current literature, but also as a permanent book of reference, the Journal will be a necessity to all surgeons and an essential to all libraries.

The whole turn out of the well-bound volume, which includes the first four parts of the Journal, in itself makes a great addition to a library.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Walter G. Smith, M.D., F.R.C.P.I.
General Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF SURGERY.

President—R. D. Purefoy, M.D., P.R.C.S.I.
Sectional Secretary—C. A. Ball, M.D., F.R.C.S.I.

Friday, March 20, 1914.

The President in the Chair.

Card Specimens.

Cancer of the Gall Bladder.

Mr. A. Blayney showed a specimen from a woman aged forty-two. Up to last Christmas she showed no symptoms, but about that time she suffered from distension and pain in the region of the epigastrium and to the right side. Her appetite failed completely, and there was occasional vomiting. Examination revealed a tumour in the region of the gall-bladder, which, taken in conjunction with the symptoms, led to the belief that the patient was suffering from gall stones. On operation it was found that the fundus of the gall-bladder presented a distinct tumour, somewhat nodular on the surface, and involving the liver. The gall-bladder was removed with the object of diminishing the pain. Some gall stones were found, as is usual in cases of carcinoma. The patient has done well, and the pain has been relieved.

The President said the case was of interest, as are most cases of disease of the gall-bladder, on account of the difficulty of diagnosis. He inquired if the patient was jaundiced at any time.

Mr. Blayney, replying, said there was no jaundice, nor were there any signs of obstruction.

Ulcer Excised from Hour-glass Stomach.

Mr. Seton Pringle said the specimens were taken from a woman who had been sent to hospital with a provisional diagnosis of gastric ulcer. There was a history of symptoms of gastric ulcer extending over several years. For three weeks preceding admission she complained of very great pain, not regularly after food, but persisting all the time; vomiting was frequent, and for four days before admission the vomiting was almost constant. Temperature and pulse were normal, and there was no distress when she came to hospital. On examination of the abdomen there was tenderness in the epigastrium to the left of the middle line. On opening the abdomen it was found that there was a very tight hour-glass constriction in the middle third of the stomach, immediately above which there was a hard mass adherent to the pancreas. The question of malignancy arose, and the easiest procedure was excision, as it was felt that this ulcer might not heal up after gastro-enterostomy, so the stomach was divided between two clamps, and on lifting it up he was able to pull off the ulcer from the anterior surface of the pancreas where it was adherent. After the ulcer was passed another clamp was put on the stomach, and an end-to-end suture of the two halves of the stomach was done. A drain was put in, which was removed after two days, and the patient made an uninterrupted recovery. In another case that he had since met with the ulcer was adherent to the ribs, and could not be excised. Sections were made of the specimen, and no sign of malignancy could be found.

Mr. Blayney said his experience of hour-glass stomach met with during operation was confined to one case, and in it there was no evidence of active ulceration at the time. He thought no operation but the one performed by Mr. Pringle would give a good result. In his own case he did what was known as Finney's operation. In a recent case in which he operated for ruptured gastric ulcer perforation

occurred on the anterior aspect of the stomach. There was considerable induration about the edge of the ulcer, and it was thought that the recurrence was due to the sutures giving way. There was, however, some doubt as to the findings at the *post-mortem* examination, which showed that the surface of the pancreas was exposed for about the area of a five shilling piece, and there was a considerable amount of dark material in the stomach like as if hæmorrhage had taken place before the operation was performed.

Mr. W. I. de Courcy Wheeler said that every case of this kind would suggest its own treatment. He had experience of three such cases, and in each of them he decided to do a different operation. One was stricture of the pylorus, and in this case it was easy to anastomose; in the second case it was found easier to do a Finney's operation; and in the third the stomach was resected, and an end-to-end anastomosis was done. The latter was easy, as the cardiac end of the stomach was so narrowed that it was not difficult to join. In each of the cases the patient did well.

Mr. Stokes said he had seen two cases in which a gastro-enterostomy had previously been done to the lower pouch. The patients were not improved, and on opening the abdomen to see what was wrong it was found that the anastomosis had been done to the lower end of the stomach. In both cases another gastro-enterostomy had to be performed.

Notes on Case of Enlarged Gall Bladder with unusual signs.

Mr. R. Atkinson Stoney described a case recently under his care in the Royal City of Dublin Hospital. A woman, aged thirty-seven, was admitted complaining of a lump in the abdomen, which she had noticed for about a year, and which had been increasing in size, but had given rise to no pain. On examination there was a lump about the size of a lemon in the right side of the abdomen, which could be pushed nearly entirely under the ribs, and in a downward direction to the level of the umbilicus; there was very little lateral movement. It seemed immediately under the anterior abdominal wall. On bi-manual palpation it slipped up under the ribs with the sensation characteristic of a movable kidney, but did not entirely disappear. The diagnosis lay between a movable kidney and an enlarged gall-

bladder with a low position, probably owing to the presence of a Riedel's lobe. An incision was made in the loin, and a movable kidney was found, and a nephropexy was performed. When dressing the case a fortnight later the tumour was again found, if anything larger than before. An abdominal incision was made, and a greatly distended gall-bladder found adherent to the inner surface of a well-developed Riedel's lobe. A large round stone was felt impacted in the cystic duct. The gall-bladder was removed, and the patient left hospital three weeks later. On opening the gall-bladder it was found full of opalescent mucoid fluid, and a second stone was found loose, about the same size as the impacted stone, and with a facet on either end, each of which fitted exactly the facet on the second stone. The physical signs were to be explained by the presence of the two conditions. On compression the movable kidney slipped up under the ribs, and the gall-bladder, with the attached Riedel's lobe, was also partially displaced up under the liver.

The President said the Section was indebted to Mr. Stoney for his notes on a very difficult case. The reference to the pain associated with the passing of stone recalled to his mind a case on which he had operated for tubal pregnancy. The physician who had seen the patient in the country believed, from the collapse present and the region where the pain was, that she was passing a gall-stone. When she came into hospital it was found that the symptoms justified operation, and the condition was ascertained to be ruptured tubal pregnancy. He inquired if the drain was generally removed so early as the third day.

Mr. Pringle said this case was another example of the difficulty of diagnosis of these tumours, and pointed out that mistakes are very likely to be made. His last case was diagnosticated as tumour of the colon. In a case such as the one reported he would have performed cholecystectomy. In this way he suggested the whole organ could be completely taken away without the risk of infecting the peritoneum.

Mr. Blayney said he had at present under his charge a patient presenting all the signs enumerated in this case—namely, movable kidney and distended gall-bladder. She was aged thirty, and had been treated for duodenal ulcer.

He made a diagnosis of tumour in the gall-bladder. The anterior surface of the tumour came close to the abdominal wall and to the umbilicus, which was a condition not met with in movable kidney. He pointed out that the kidney moved about in the radius of the renal vessels. He considered if a case is met with where a stone is impacted in a cystic duct the only treatment was removal of the gall-bladder, as the condition was likely to be followed by stricture, and a good deal of trouble would be required to get the gall-bladder to close, and, even if it did close, another stone might give rise to trouble. He considered removal of the gall-bladder to be the best procedure.

Mr. Kennedy recalled a specimen, shown by him five years ago, of a gall-bladder filled with calculi down as far as the pelvis. In that case it was only when an incision was made down on the gall-bladder that he found it had reached into the peritoneum. He considered it difficult in some cases to distinguish between tumour of the kidney and tumour of the gall-bladder. He had recently experienced a case of a lady who was examined under an anæsthetic by a surgeon on the staff of a London hospital, and was informed that nothing could be found. About three years afterwards she was operated upon for movable kidney, and when seen by him he found a tumour extending from the posterior surface of the liver and involving the gall-bladder. He made an effort to remove it, but failed, and she died in forty-eight hours afterwards. The specimen was removed, and it was said to have originated in the kidney. He pointed out that in cases where the gall-bladder was removed at operation difficulty was experienced in draining the bile ducts.

Mr. Stokes inquired what Mr. Stoney defined as Riedel's lobe. He mentioned that although these tumours of the gall-bladder may not be malignant, papillomata are usually met with, and it is often very hard to decide whether they are malignant or not.

Mr. Stoney, replying, said that in this case he had only put the drain down to the raw surface of the liver, and in cases where he was only draining for slight oozing he removed the drain in three days; but in other cases he generally allowed it to remain until the fourth or fifth day. As to aspirating the gall-bladder before attempting to remove it, he found it easier to remove after aspirating some of its con-

tents, and if a little pains were taken there was not much danger of sepsis. The main difficulty in these cases with the diagnosis was the low position and the free mobility. Owing to the enlargement and the alteration in the region of the gall-bladder in this case he had no doubt that removal was the proper treatment. He held the gall-bladder should be taken out where the disease can be removed completely, as by removing the gall-bladder the patient recovered very much quicker, and there was no possibility of a recurrence of a stone, and the chance of later malignant disease was minimised. The definition of Riedel's lobe was the tongue-shaped projection extending downwards from the liver.

Some Experiences in Crile's Method of Shockless Surgery: (Anoci-association).

Mr. W. I. de C. Wheeler read a paper illustrated with lantern slides on Crile's method of shockless surgery. He reviewed his own experiences for the past few months, and, while admitting that the theory and practice were not ideal at present, a remarkable advance had been made towards the prevention, either transient or permanent, of ill effects from operations.

Mr. Wheeler stated that in many cases after prolonged major operations the patients had little or no sensation of pain, there was no reactionary rise of temperature, no quickening of the pulse, and no manifestation of shock, great or small.

It was likely that Crile's discoveries would mark a new era in surgery, and that a development of the principle of anoci-association would be as definite a milestone in surgical progress as that which marked the control of hæmorrhage in the days of John Hunter and the triumph of asepsis through the efforts of Lister.

In the attempt to perform operations under conditions which excluded all harmful or nocuous stimuli from the brain (anoci-association), Mr. Wheeler urged the necessity of paying attention to emotional and psychic stimuli which produced brain-cell changes equal to, if not in excess of, the nocuous stimuli transmitted to the brain by the use of the scalpel during the operation.

The technique was simple, but must be conscientiously carried out. The patient, so far as possible, should be

relieved from all anxiety and fear, and, for the anxious hour before operation, should be given omnopon and scopolamine or other "fear-eliminating" drug. Every layer of tissues to be divided is previously injected with ½ per cent. novocaïn adrenalin solution, which acts rapidly, and before the close of the operation, or earlier if desired, a .75 urea-quinine solution is infiltrated into the tissues to take on the action of the novocaïn, and to insure nerve-block for the days following operation.

Mr. Wheeler stated that for ten years he had used novocaïn in conjunction with general anæsthesia, and for the past two years had, in addition, administered omnopon and scopolamine prior to operation. For the last few months he had been converted by the work of Crile and the advocacy of Moynihan to a very systematic infiltration of the tissues and to the employment of urea and quinine.

The surgeon must recognise three factors to be a successful "anoci-associationist." Emotional and psychic disturbance prior to operation must be reduced to a minimum. Pain and fright must be entirely excluded at the time of operation by the administration of a suitable anæsthetic. The stimuli, which normally are carried by the nerve paths and produce harmful changes in the brain, must be locally anchored by the injection of nerve-blocking solutions—novocaïn for immediate division, urea and quinine to prevent after-pain and to inhibit mucous stimuli for the days following operation.

The President said Mr. Wheeler made an allusion to a matter which is engaging the attention of the profession—namely, the question of internal secretions. He (the President) recollected a case of a well-developed woman who was admitted to the Rotunda Hospital suffering very great pain at each menstrual period, and it was found on examination that she had no vagina or uterus. The uterus was represented by a small nodule of fibrous tissue. She had two large ovaries. He was struck by the considerable elevation of temperature—*i.e.*, 1½°. This case was under consideration years ago, when the question of internal secretion had not attracted so much attention and he considered that the removal of the ovaries was warranted, but whether the patient suffered from the want of internal secretion afterwards he did not know, as she went from under observation.

He inquired as to the efficacy or otherwise of injecting strychnine where shock developed.

Mr. Stoney said he had no practical experience of the subject, but while the question of anoci-association was very sound in theory he considered in practice it was slightly different. He pointed out that the ordinary surgical operation was not usually associated with a great deal of shock—for instance, the removal of cartilage from the knee, which was one of the cases cited in Mr. Wheeler's paper, was not associated with marked rise in temperature or pulse, or with any great pain. The operations which he found associated with shock, and where shock is sometimes fatal, are cases of emergency abdominal operation, especially those of strangulation or obstruction, and in such cases he did not see how anoci-association could be carried out, as one of the reasons for the shock was the handling of the intestines, and he suggested that unless one infiltrated the whole of the root of the mesentery a great deal of the shock could not be done away with. This procedure he held to be impracticable in such a case on account of the time necessary to carry it out. In extensive amputations or removals of large tumours one might be able to improve the patient's chances by adopting anoci-association, but for general operative treatment, or where the number of operations to be performed on the same day was large it was not practicable.

Mr. M'Connell said that he had experience of anoci-association, and had seen Crile carrying it out. The operative cases of ether anæsthesia with which Crile had compared were ones done five or ten years ago, and as the cases of anoci-association with N_2O were performed within the last two or three years, he did not think the comparison was altogether fair. He was sorry that in the cases Mr. Wheeler did N_2O was not used, as ether is said to be a noxious agent, and, quite apart from anoci-association, ether would do a patient harm when N_2O would not. He had seen one case in which the patient was said to be only getting N_2O and local anæsthesia, but he was not satisfied that that patient was not getting ether as well. He held that there was great difficulty in proving whether anoci-association did any good as charts could be shown of cases done in the ordinary way to demonstrate that there was no shock. With regard to the effect of omnopon given beforehand, in some cases he

noticed that it did well, but in others, if the patient was moved about much, or if there was any tendency to excitement around, the patient gets into a hyper-excitable condition, and it was then more difficult to get them anæsthetised. It had been stated that urea-quinine may cause necrosis of tissue; he did not know if such was the case. He suggested that the effect of the anæsthetic on the peritoneum would have worn off before it came to be stitched up. He agreed with Mr. Stoney as to the effect of handling the intestines.

Mr. Wheeler, replying, said he was aware that there were defects in the subject. He felt that one could, of course, get on tolerably well without this procedure, but pointed out that so much do the patients think about the operation that they are accustomed to afterwards date every occurrence from the time of operation. He held that a slight rise of temperature was due to shock. Crile's idea was to have no shock. He agreed as regards the cases of intestinal obstruction. The faster and less complicated the operation in these cases the better would be the result. He joined issue with Mr. M'Connell as to N_2O cases, and pointed out that Crile said if N_2O cannot be given it was far better to give ether; and Crile allowed that ether was most satisfactory, although he could do with N_2O himself. He agreed that excitement was caused by omnopon if the patient was wakened up. It should also be remembered that it was hard to give ether after omnopon, as the patient breathes very slowly. Urea-quinine did not cause necrosis of the tissues. Local anæsthesia without general anæsthesia was not anoci-association at all. Mr. M'Connell was entirely wrong in his ideas about the anæsthesia of the peritoneum. Novocaïn solution was very carefully injected into the peritoneal tissues before cutting, and urea-quinine was afterwards injected, not only to ensure anæsthesia during the operation, but it anæsthetised tissues for four or five days afterwards. He was of opinion that strychnine was bad to administer in any case of shock, although he recognised that there was much diversity of opinion in the matter.

SANITARY AND METEOROLOGICAL NOTES.

Vital Statistics.

For four weeks ending Saturday, May 16, 1914.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ended May 16, 1914, in the Dublin Registration Area and the twenty-six principal provincial Urban Districts of Ireland was 18.2 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,205,280. The deaths registered in each of the four weeks of the period ending on Saturday, May 16, and during the whole of that period in certain of the districts, alphabetically arranged, correspond to the following annual rates per 1,000 :—

County Boroughs, &c.	Week ending				Average Rate for 4 weeks
	April 25	May 2	May 9	May 16	
27 Town Districts	**25.3**	**20.6**	**18.6**	**18.2**	**20.7**
Dublin Reg. Area ...	27.9	24.5	21.7	19.5	23.4
Dublin City	30.9	26.7	22.0	21.8	25.3
Belfast	23.4	18.2	15.2	17.6	18.6
Cork	33.3	23.1	19.7	21.1	24.3
Londonderry	16.5	19.0	12.7	12.7	15.2
Limerick	28.4	23.0	19.0	10.8	20.3
Waterford	24.7	20.9	26.6	19.0	22.8

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 27 districts during the week

ended Saturday, May 16, 1914, were equal to an annual rate of 1.9 per 1,000. Among the 135 deaths from all causes in Belfast were 3 from measles, 2 from scarlet fever, 5 from whooping-cough, and 3 from diarrhœa and enteritis of children under 2 years. Included in the 31 deaths from all causes in Cork was 1 from whooping-cough. One of the 6 deaths from all causes in Kilkenny was from diphtheria. Of the 3 deaths in Newtownards, 1 was from whooping-cough, and of the 4 deaths recorded for Lisburn, 1 was from measles and 1 from diphtheria.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin, as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 406,000; that of the City being 310,467, Rathmines 39,155, Pembroke 30,240, Blackrock 9,197, and Kingstown 16,941.

In the Dublin Registration Area the births registered during the week ended May 16, amounted to 197—96 boys and 101 girls, and the deaths to 160—78 males and 82 females.

DEATHS.

The deaths registered, omitting the deaths (numbering 8) of persons admitted into public institutions from localities outside the Area, represent an annual rate of mortality of 19.5 per 1,000 of the population. During the twenty weeks ending with Saturday, May 16, the death-rate averaged 24.2, and was 0.1 below the mean rate for the corresponding portions of the ten years, 1904–1913.

The total deaths registered, numbering 160, represent an annual rate of 20.5 per 1,000. The annual rate for the past twenty weeks was 25.7 per 1,000, and the average annual rate for the corresponding period of the past ten years was 25.6 per 1,000 of the mean population for all deaths registered.

The deaths (160) included 1 from whooping-cough, 1 from enteric fever, 1 from influenza, 1 from malaria, 17 from measles, and 5 from diarrhœa and enteritis in children under 2 years. In each of the three preceding weeks deaths from whooping-cough had been 2, 2, and 2; from enteric fever, 0, 0, and 0; from influenza, 0, 0, and 2; from measles, 35, 40, and 29; and

State of Infectious Disease in the Dublin Registration Area, and in Belfast, Cork, Londonderry, Limerick, and Waterford.

The following Table shows the Number of Cases of Infectious Diseases notified, under the "Infectious Diseases (Notification) Act, 1889," and the "Tuberculosis Prevention (Ireland) Act, 1908," in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the Cities of Belfast, Cork, Londonderry, Limerick, and Waterford, during the week ended May 16, 1914, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

Cities and Urban Districts	Week ending	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Pyrexia, origin uncertain) *a*	Enteric or Typhoid Fever	Erysipelas	Puerperal Fever	Whooping-cough	Cerebro-spinal Fever	Acute Polio-myelitis	Pulmonary Tuberculosis	Total
City of Dublin	April 25	*	*	6	–	–	8	–		1	–	–	*	–	–	34	49
	May 2	*	*	5	–	–	11		–	3	1	–	*	–	–	29	49
	May 9	*	*	10	1		18	–		5	2	–	*	–	–	32	58
	May 16	*	*	12		–	5	–		3	2	–	*	–	–	35	60
Rathmines and Rathgar Urban District	April 25	*	*	–	–	–	2		–	–	1	–	*	*	*	*	3
	May 2	*	*	1	–	–	1	–			1	–	*	*	*	*	3
	May 9	*	*	3	–	–	2	–	–	1	–	–	*	*	*	*	6
	May 16	*	*	1	–	–	–	–	–	1		–	*	*	*	*	2
Pembroke Urban District	April 25	14	–	13	–	–	2	1	–	–	–	–	1	–	*		31
	May 2	3		2	–	–	2	1	–		–	–	–	–	*	1	9
	May 9	1	–	4	–	–	–	–	–	–		–	–	–	*	–	5
	May 16	1	–	–	–	–	–		–	–		–		–	*	1	2
Blackrock Urban District	April 25	*	*	–	–			–	–		–	–	*	–	*	*	1
	May 2	*	*	–	–	–	1	–	–	1			*	–	*	*	2
	May 9	*	*	–	–	–	–	–	–	–			*	–	*	*	1
	May 16	*	*	–	–	–					–	–	*	–	*	*	
Kingstown Urban District	April 25	*	*	–		–		–	–	–	–		*	–	*		1
	May 2	*	*	1	–	–		–	–	–	–	–	*	–	*	–	1
	May 9	*	*	–	–	–	–	–	–	–	–	–	*	–	*		1
	May 16	*	*	–	–	–		–		1	–	–	*	*	*	–	1
City of Belfast	April 25	*	*	24	–		3	–	–	1	4		*	–	–	3	35
	May 2	*	*	26	–		1	–	–	2	3	1	*	–	–	3	36
	May 9	*	*	35	–		6	–	1	4	4		*	–	–	9	59
	May 16	*	*	27	3	–	5	1	1	1	6	–	*		–	7	54
City of Cork	April 25	2	*	4	–	–	–		1	3	1	–	*	*	*	*	11
	May 2	4	*	2	–	–	1	–	–	–		1	*	*	*	*	8
	May 9	8	*	–	–	–	–	1	1	–			*	*	*	*	10
	May 16	2	*	2	–	–			1	–	1	–	*	*	*	*	6*b*
City of Londonderry	April 25	*	*	1	–	–	–	–	–	–	1		*	*	*	*	2
	May 2	*	*	2	–	–	1	–	–		–	–	*	*	*	*	3
	May 9	*	*	–	–	–	–	–	–		–	–	*	*	*	*	
	May 16	*	*	1	–	–	–	–	–	1	–	–	*	*	*	*	2
City of Limerick	April 25	*	*	1	–	–	–	–	–	1	–	–	*	–	*	*	2
	May 2	*	*	–	–	–	–	–	–		–	–	*		*	*	
	May 9	*	*	1	–	–	–	–	–	–	–	–	*	–	*	*	1
	May 16	*	*	2	–	–	–	–	–		–	–	*		*	*	2
City of Waterford	April 25	*	*	–	–	–	–	–	–	–	–	–	*	*	*	2	2
	May 2	*	*	1	–	–	–	–	–		–	–	*	*	*	4	5
	May 9	*	*	–	–	–	–	–	–		–	–	*	*	*	–	
	May 16	*	*	–	–	–		–	–	1	–	–	*	*	*	1	2

a Continued Fever

b Not including three cases of whooping-cough.

from diarrhœa and enteritis in children under 2 years, 3, 3, and 1, respectively.

Of 29 deaths from tuberculosis (all forms), 24 were attributed to pulmonary tuberculosis, 1 to abdominal tuberculosis, and 4 to other forms of the disease. In each of the three preceding weeks, deaths from all forms of tuberculosis had been 33, 24, and 31.

There were 11 deaths from cancer, or malignant disease, excluding those of 2 persons from localities outside the Area from the same disease.

There were 6 deaths of infants from premature birth, 2 deaths from convulsions, 2 from congenital malformations, and 2 deaths from congenital debility.

The deaths from pneumonia included 9 from broncho-pneumonia, and 4 from pneumonia (type not distinguished).

Seven deaths were caused by organic diseases of the heart. There were 15 deaths from bronchitis.

There were 7 accidental deaths, including 2 deaths of children (aged respectively 5 weeks, and 4 years), from burns or scalds, and 1 death caused by drowning.

In 2 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases comprise the death of 1 infant under 1 year old, and the death of a person aged 76 years.

Fifty-four of the persons whose deaths were registered during the week were under 5 years of age (30 being infants under 1 year old, of whom 12 were under 1 month old), and 32 were aged 65 years and upwards, including 21 persons aged 70 and upwards. Among the latter were 11 aged 75 years and upwards.

Cases of Infectious Diseases under Treatment in Dublin Hospitals.

During the week ended May 16, 1914, 6 cases of enteric fever were admitted to hospital, 3 were discharged, and 23 cases remained under treatment in hospital at the close of the week, the respective numbers in hospital at the close of the three preceding weeks having been 24, 22, and 20.

Thirty-three cases of measles were admitted to hospital, 46 cases were discharged, there were 2 deaths, and 117 cases remained under treatment at the close of the week. At the

end of the three preceding weeks such cases had been 143, 137, and 132, respectively.

Sixteen cases of scarlet fever were admitted to hospital, 8 were discharged, and 103 cases remained under treatment at the close of the week. This number is exclusive of 22 patients under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital. At the close of the three preceding weeks the cases in hospital had been 90, 104, and 95, respectively.

Six cases of diphtheria were admitted to hospital, and 8 were discharged. The cases in hospital, which at the close of the three preceding weeks had numbered 31, 37, and 46, respectively, were 44 at the close of the week under review.

In addition to the above-named diseases, 5 cases of pneumonia were admitted to hospital, 8 were discharged, there were 2 deaths, and 19 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, May 16, in 97 large English towns (including London, in which the rate was 13.4) was equal to an average annual death-rate of 14.1 per 1,000 persons living. The average rate for 16 principal towns of Scotland was 15.3 per 1,000, the rate for Glasgow being 16.7, and that for Edinburgh 13.1.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by A. Maxwell Williamson, M.D., B.Sc., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended May 16. From this report it appears that of a total of 72 cases notified, 41 were of scarlet fever, 14 of phthisis, 11 of diphtheria, 5 of erysipelas, and 1 of enteric fever. Among the 545 cases of infectious diseases in hospital at the close of the week were 247 cases of scarlet fever, 203 of phthisis, 55 of diphtheria, 14 of measles, 4 of enteric fever, 2 of whooping-cough, 1 of chicken-pox, and 10 of erysipelas.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of May, 1914.

Mean Height of Barometer, - - -	30.111 inches.
Maximal Height of Barometer (19th, at 9 a.m.),	30.486 ,,
Minimal Height of Barometer (6th, midnight),	29.320 ,,
Mean Dry-bulb Temperature. - -	51.5°.
Mean Wet-bulb Temperature, - -	48.1°.
Mean Dew-point Temperature, - -	44.7°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.303 inch.
Mean Humidity, - - -	78.3 per cent.
Highest Temperature in Shade (on 17th), -	68.8°.
Lowest Temperature in Shade (on 25th), -	35.5°.
Lowest Temperature on Grass (Radiation) (25th)	33.8°.
Mean Amount of Cloud, - - -	62.3 per cent.
Rainfall (on 17 days) - - -	1.828 inches.
Greatest Daily Rainfall (on 5th) - -	.442 inch.
General Directions of Wind, - -	-W., N.W., N.

Remarks.

May, 1914, may be described as a favourable and seasonable month, in the course of which alternate periods of very cold and comparatively warm weather occurred. The drought which began on April 13th drew to a close on the afternoon of Sunday, May 3rd, a heavy shower falling at 4 40 p.m. of that day. This was followed by a series of cloudy, squally, showery days, culminating in a spell of severe cold for the time of year—the mean temperature of the 8th and 9th conjointly was 44.3°. Friday, the 8th, was very inclement in the Dublin district, heavy showers of rain and hail being borne on the wings of a fresh gale from N.W.

Towards the end of the second week the weather had become generally fine and bright—warm in the daytime, but nowhere hot. An anticyclone, which had extended to Ireland from the Azores on the 10th, subsequently stretched eastwards across the United Kingdom. This system was accompanied by fair, dry weather.

During the week ended Saturday, the 23rd, very favourable and seasonably warm weather was enjoyed. This depended

on the persistence of a ridge of high pressure extending in a north-easterly direction from the neighbourhood of the Azores across Ireland and England to Denmark and the Baltic. Wednesday, the 20th, was a fair summer's day—especially warm in England, the thermometer rising to 76° at some London stations. Rain fell heavily in the Dublin district on the night of the 22nd.

A spell of very cold weather ushered in the last week. On Wednesday, the 27th, however, conditions became more seasonable, although nothing like warm summer weather can be said to have occurred at any time, except on Thursday, the 28th, when the thermometer rose to 67° in Dublin and at Birr Castle. The night of the 24th-25th was exceptionally cold—in Dublin city the thermometer fell to 36°; at Birr Castle the minimum was 29°, and Nairn, in Scotland, reported 26°. The frosts at this time did great damage to vegetation in many parts of the British Isles.

In Dublin the arithmetical mean temperature (52.4°) was 0.2° above the average (52.2°). The mean dry-bulb readings at 9 a.m. and 9 p.m. were 51.5°. In the forty-nine years ending with 1913, May was coldest in 1869 (M. T. = 48.2°), and warmest in 1893 (M. T. = 56.7°). In 1911 the M. T. was 55.3°, in 1912, 53.5°, and in 1913, 52.3°.

The mean height of the barometer was 30.111 inches, or 0.122 inch above the corrected average value for May—namely, 29.989 inches. The mercury rose to 30.486 inches at 9 a.m. of the 19th, and fell to 29.320 inches at midnight of the 6th. The observed range of atmospheric pressure was, therefore, 1.166 inches.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 51.5°, or 2.6° above the value for April, 1914—48.9°. Using the formula *Mean Temp.* = *Min.* + (*Max.* — *Min.*) × .47, the value is 52.0°, or 0.2° above the average mean temperature for May, calculated in the same way, in the thirty-five years, 1871–1905, inclusive (51.8°). The arithmetical mean of the maximal and minimal readings was 52.4°, compared with a thirty-five years' average of 52.2°. On the 17th the thermometer in the screen rose to 68.8°—wind, N.; on the 25th the temperature fell to 35.5°—wind, N. The minimum on the grass was 33.8° on the 25th.

The rainfall amounted to 1.828 inches, distributed over 17

days. The average rainfall for May in the thirty-five years, 1871–1905, inclusive, was 1.970 inches, and the average number of rain-days was 15. The rainfall therefore was slightly below the average, while the rain-days were slightly above it. In 1886 the rainfall in May was very large—5.472 inches on 21 days; in 1869, also 5.414 inches fell on 19 days. On the other hand, in 1895, only .177 inch was measured on but 3 days. In 1896 the fall was only .190 on 7 days. In 1911, 1.286 inches fell on 10 days; in 1912, 1.042 inches on 19 days; and in 1913, 2.802 inches on 17 days.

Solar halos appeared on the 2nd, 9th, 17th, and 28th. High winds were noted on 6 days, including a gale on the 8th. Hail fell on the 5th, 8th, 11th, and 24th. There was a fog on the 15th.

The mean minimal temperature on the grass was 44.5°, compared with 45.5° in 1913, 44.5° in 1912, 46.2° in 1911, 42.0° in 1910, 41.9° in 1909, 45.2° in 1908, 41.6° in 1907, 41.9° in 1906, 42.5° in 1905, and 37.6° in 1894. The maximum fell short of 50° on the 9th (48.9°). The highest daily minimum was 54.3° on the 21st. The mean maximum was 58.6°, the mean minimum was 46.1°

The rainfall in Dublin during the five months ended May 31st amounted to 8.132 inches on 85 days, compared with 13.899 inches on 91 days in 1913, 11.161 inches on 87 days in 1912, 5.986 inches on 69 days in 1911, 12.421 inches on 92 days in 1910, 10.098 inches on 75 days in 1909, 10.078 inches on 95 days in 1908, 9.499 inches on 81 days in 1907, 11.592 inches on 97 days in 1906, 9.026 inches on 81 days in 1905, 11.741 inches on 92 days in 1904, 12.560 inches on 95 days in 1903, 9.973 inches on 81 days in 1902, 7.724 inches on 67 days in 1901, only 5.971 inches on 70 days in 1896, and a thirty-five years' average of 10.040 inches on 81 days.

At the Normal Climatological Station in Trinity College, Dublin, the observer, Mr. Sidney A. Clark, returns the mean height of the barometer as 30.103 inches, the highest reading observed being 30.45 inches at 9 a.m. of the 19th, the lowest, 29.41 inches, at 9 a.m. of the 7th. The arithmetical mean temperature was 51.8°, the mean dry-bulb reading at 9 a.m. and 9 p.m. being 52.2°. Rain fell on 12 days to the amount of 1.619 inches, .390 inch being measured on the 22nd. The

number of hours of bright sunshine registered by the Campbell-Stokes sunshine recorder was 144.1, giving a daily average of 4.7 hours. The corresponding figures for May, 1904, were 192.5 hours and 6.2 hours ; for 1905, 215.7 hours and 7.0 hours ; for 1906, 132.5 hours and 4.3 hours ; for 1907, 173.0 hours and 5.6 hours ; for 1908, 193.9 hours and 6.3 hours ; for 1909, 231.5 hours and 7.5 hours ; for 1910, 175.5 hours and 5.7 hours ; for 1911, 214.0 hours and 6.9 hours; for 1912, 157.8 hours and 5.1 hours; and for 1913, 189.7 hours and 6.1 hours respectively. The mean earth-temperature at 9 a.m. was 53.6° at a depth of one foot below the surface, 51.1° at 4 feet. The lowest temperature on the grass (terrestrial radiation) was 29.0° on the 25th. The highest temperature in the shade was 70.0° on the 16th ; the lowest was 34.0° on the 25th.

———

Captain Edward Taylor, D.L., gives the rainfall at Ardgillan, Balbriggan, Co. Dublin, as 1.90 inches on 14 days, the rainfall being .03 inch below, and the rain-days equal to, the average. The heaviest fall in 24 hours was .46 inch on the 22nd. The rainfall from January 1st equals 8.39 inches on 78 days—that is, 2.02 inches and 1 day below the average. The thermometers in the screen rose to 69.9° on the 17th, and fell to 31.9° on the 25th. The May rainfall at Ardgillan has ranged from 3.04 inches on 18 days in 1913 to .14 inch on 3 days in 1895.

Mr. T. Bateman, of The Green, Malahide, Co. Dublin, returns the rainfall at 1.49 inches on 13 days. The greatest fall in 24 hours was .315 inch on the 13th.

The rainfall at Stirling, Clonee, Co. Meath, according to Mr. J. Pilkington's return, was 1.90 inches on 13 days, the largest fall on any one day being .45 inch on the 22nd. From January 1st to May 31st, 9.38 inches of rain fell on 82 days at Stirling. There was a heavy frost on the night of the 24th.

At the Ordnance Survey Office, Phœnix Park, Dublin, rain fell on 15 days to the amount of 2.110 inches, the greatest measurement in 24 hours being .430 inch on the 22nd. The total duration of bright sunshine was 152.9 hours, the largest amount recorded on one day being 13.2 hours on the 27th.

At Cheeverstown Convalescent Home for Little Children, Clondalkin, Co. Dublin, Miss C. Violet Kirkpatrick recorded 2.27 inches of rain on 13 days. The largest fall in 24 hours was .47 inch on the 22nd. On the 5th, .43 inch fell.

At 21 Leeson Park, Dublin, Dr. Christopher Joynt,

F.R.C.P.I., measured 1.765 inches on 16 days, the largest amount recorded in 24 hours being .420 inch on the 22nd.

Mr. Harold Fayle sends the following return from 19 Highfield Road, Rathgar, Co. Dublin :—

Mean Height of Barometer - - -	30.123 inches.
Maximal Height of Barometer (19th, at 9 a.m.)	30.50 ,,
Minimal Height of Barometer (7th, at 9 a.m.),	29.43 ,,
Mean Dry-Bulb Temperature, - -	51.5°.
Mean Wet-Bulb Temperature, - -	48.5°.
Mean Vapour Pressure - - -	.30 inch.
Mean Humidity, - - -	80 per cent.
Mean Maximum Temperature, - -	59.5°.
Mean Minimum Temperature, - -	44.4°.
Arithmetical Mean, - - -	52.0°.
Highest Temperature in Shade (16th) -	71°.
Lowest Temperature in Shade (25th) -	32°.
Lowest Temperature on Grass (25th), -	28°.
Days of Ground Frosts (25th and 27th). -	2.
Mean Amount of Cloud, - - -	72.5 per cent.
Rainfall, on 15 days, - - -	1.77 inches.
Greatest Daily Rainfall (22nd), -	.47 inch.

General Directions of Wind, S.W. 15, S.E. 10, N.W. 10

Dr. Arthur S. Goff reports that the rainfall at Belfort House, Dundrum, Co. Dublin, was 1.93 inches on 18 days. The greatest daily rainfall was .46 inch on the 22nd. The mean shade temperature was 52.9°, compared with a ten years' (1901–1910) average of 46.6°. The thermometric range was from 72° on the 16th to 36° on the 24th and 25th.

At Manor Mill Lodge, Dundrum, Co. Dublin, Mr. George B. Edmondson recorded a rainfall of 2.00 inches on 17 days, the maximum being .49 inch on the 5th. The mean temperature of the month was 52.9°, the thermometric range being from 70° on the 17th to 37° on the 25th and 27th.

At Marino, Killiney, Co. Dublin, Mr. W. M'Cabe, the observer for the Right Hon. L. A. Waldron, registered 1.75 inches of rain on 15 days. The largest fall in 24 hours was .43 inch on the 22nd.

At the Sanatorium of the Dublin Joint Hospital Board, Crooksling, Co. Dublin, Dr. A. J. Blake, the Resident Medical Superintendent, reports a rainfall of 2.51 inches on 15 days. The largest measurement in 24 hours (from 9 a.m. to 9 a.m.) was .65 inch on the 22nd. The rainfall at Crooksling in

April amounted to 1.51 inches on 14 days, the largest fall in 24 hours was .28 inch on the 3rd.

Dr. John H. Armstrong reports that at Coolagad, Greystones, Co. Wicklow, the rainfall amounted to 1.90 inches on 14 days. The heaviest fall in 24 hours was .32 inch on the 22nd. The total rainfall in 1914, up to April 30th, was 12.42 inches on 84 days, compared with 6.07 inches on 56 days in the corresponding period of 1911, 19.08 inches on 74 days in 1912, and 18.04 inches on 78 days in 1913. Fog occurred on the 15th and 17th. The Welsh Mountains were seen at 6 a.m. of the 13th.

Mrs. Sydney O'Sullivan recorded 1.45 inches of rain on 13 days at Auburn, Greystones, the largest measurement in 24 hours being .22 inch on the 22nd.

Dr. Charles Denys Hanan, M.D., Resident Medical Officer at the Royal National Hospital for Consumption, Newcastle, Co. Wicklow, reports that the rainfall at that place was 1.89 inches on 12 days, the maximal fall in 24 hours being .36 inch on the 4th. The mean temperature of the air was 50.6°, the thermometer in the screen having risen to 67° on the 21st, and fallen to 35° on the 24th and 25th. The mean maximal temperature was 56.9°, the mean minimum being 44.2°.

At the Rectory, Dunmanway, Co. Cork, the Rev. Arthur Wilson, M.A., measured 2.04 inches of rain on 10 days. The rainfall was much less than the average. The heaviest falls were on the 2nd (.55 inch) and 3rd (.43 inch). There was no rain from the 13th to the 20th and from the 23rd to the 31st, and only .20 inch fell after the 9th. There was a severe frost on the night of the 24th, which injured the early potatoes in low lying districts. It was very warm from the 13th to the 20th. Northerly winds prevailed during the last few days. Since Easter Day the rainfall has been only 2.08 inches. In the 80 days before Easter it was 25.52 inches, with only 4 rainless days.

LITERARY NOTE.

The fifth edition of Sir Patrick Manson's "Tropical Diseases," revised and enlarged, has recently been published by Messrs. Cassell & Company, La Belle Sauvage, London, E.C.

PERISCOPE.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At a meeting of the College, held on Wednesday, May 19th, 1914, the following gentlemen, having passed the requisite examinations on the 10th of last January, were admitted Fellows :—

Ram Narian Bhatia, B.S., M.B. Univ. Punjab, India ; Sydney Guy Billington, M.B., B.S. Univ. Lond., M.R.C.S. Eng., L.R.C.P. Lond., Birmingham ; Oliver Henry Blacklay, M.D. Univ. Edin., Accrington ; Ernest Hugh Cameron, M.B., Ch.B. Univ. Edin., Lasswade, Midlothian ; Harold Gordon Chouler, L.R.C.S.E. (Triple Qual.), Port Elizabeth, South Africa ; William Alexander Dunn, M.R.C.S. Eng., L.R.C.P. Lond., London ; George Keith Gifford, M.D. Univ. Aberd., Staffs. ; Darrell Peters Hanington, M.D., C.M. McGill Univ. Montreal, British Columbia ; Ah Chit Jap, M.R.C.S. Eng., L.R.C.P. Lond., M.B., B.S. Univ. Durham, Surrey ; Ian Macdonald, M.B., Ch.B. Univ. Glasg., Natal, South Africa ; William MacLaren, M.B., Ch.B. Univ. Edin., Ellon, Aberdeenshire ; Frank Widowfield Melvin, M.D. Univ. Durham, Oswestry ; Reinhard Carl Johannes Meyer, M.B., Ch.B. Univ. Edin., Edinburgh ; William Charles Bernard Meyer, M.B., Ch.B. Univ. Edin., Edinburgh ; Thomas William Myles, M.B., Ch.B. Univ. Dubl., Staff Surgeon, Royal Navy ; Welton Havelock Robbins, M.D., C.M. Dalhousie Univ., Nova Scotia, Canada ; Thomas Robert Sandeman, M.B., Ch.B. Univ. Edin., West African Medical Staff ; Waldemar Bartholin Sommers, M.B., Ch.B. Univ. Edin., Burma ; and Arthur Leonard Weakley, M.R.C.S. Eng., L.R.C.P. Lond., M.B., B.S. Lond., London, S.E.

The Bronze Medal and Prize of Books presented to the College by Colonel William Lorimer Bathgate, in memory of his late father, William McPhunc Bathgate, F.R.C.S.E., Lecturer on Materia Medica in the Extra-Academical School, was awarded, after the usual competitive written examination in Materia Medica, &c., held for Session 1913-1914, to Mr. Lewis Windermere Nott, 8 Sylvan Place, Edinburgh.

The annual award of the Ivison Macadam Memorial Prize in Chemistry, consisting of a Bronze Medal and Microscope, was, after a competitive written examination in Chemistry, held for Session 1913–1914, made to Mr. Andrew Inglis Meek, c/o Moncur, 7 Viewforth Square, Edinburgh.

LITERARY INTELLIGENCE.

Messrs. Butterworth & Co. (Australia), Ltd., 4 Bell Yard, Temple Bar, London, have just published The Medical Directory (incorporating "Loxton's Medical Directory") of Australia, Tasmania, New Zealand, Pacific Islands, Malay States, China, Japan, Hong Kong, &c. The work has been compiled by F. W. Loxton. The volume runs into 340 pages, and the price is 15s. net. Amongst the contents may be mentioned Appointments in Hospitals, List of Doctors in Australasia, Commonwealth Census, Climates of Australasia, Particulars of Hospitals, Medical Boards in New South Wales, Queensland, Victoria, South Australia and Western Australia, Registration in the various States, New Zealand Medical Acts, List of Public Hospitals, &c.

The volume also contains a section dealing with the Laws Relating to Medical Practitioners in the various States. Mr. Baxter-Bruce, of the New South Wales Bar, is responsible for this section.

Messrs. J. & A. Churchill have pleasure in announcing for early publication the following new works and new editions :— "The Anatomy of the Human Skeleton," by J. E. S. Frazer, F.R.C.S. Eng., Lecturer on Anatomy, St. Mary's Hospital Medical School. With 219 illustrations, many in colour. As implied by its title, this work is not a conventional account of the bony skeleton, but aims at helping the student to master the connected parts as they exist in the complete body. It is intended for use with the skeleton and dissected parts, and the author has drawn a large number of figures, many in colours, with the object of enabling the student to follow the descriptions on the actual specimens. "A Manual of Dental Anatomy, Human and Comparative," by Charles S. Tomes, F.R.S., F.R.C.S. Seventh edition, edited by H. W. Marett Tims, M.D., M.Ch. (Edin.), F.L.S., F.Z.S. ; and A. Hopewell-Smith, L.R.C.P., M.R.C.S., L.D.S. (Eng.). With 286 illustra-

tions. The text has been completely revised and many new illustrations have been added. "The Story of Plant Life in the British Isles," Vol. II., by A. R. Horwood, F.L.S., Member of the British Botanical, Ecological, Conchological Societies, &c. With 71 illustrations from photographs, and 7 diagrams.

PETROL AS A THERAPEUTIC AGENT.

Dr. G. Arbour Stephens writes from 61 Walter Road, Swansea, as follows :—" Last December you were kind enough to publish an article by me on the value of petrol as a therapeutic agent. In that article I spoke of its value only as regards external affections and operations, but since then it may be of interest for your readers to know that I have found it of great benefit as a swab for the throat conditions found in diphtheria and scarlet fever. If used early in the former the course of the disease is considerably modified, and in many cases I have found it quite unnecessary to make use of antitoxin. In addition to its medicinal value, the ease with which petrol can be obtained, as well as its cheapness, may perhaps act as an inducement to medical men, and especially those who work in country districts, to put it to a practical test. In mouth conditions, where the question of oral sepsis has to be considered, I would like to repeat that petrol is the nicest and most efficient mouth wash that one can use."

BRONCHIAL DILATATION OF CONGENITAL ORIGIN.

M. Garnier (Société médicale des Hôpitaux) *Gazette des Hôpitaux*, 87-ième Année, No. 1, read a paper on the autopsy of a woman, thirty-eight years of age, in whom he found dilatation of the bronchi of the superior lobe of the right lung. This marked limitation of the malformation and the complete absence of any other lesion permitted the diagnosis of a congenital origin. During her life the woman frequently complained of bronchitis with purulent expectoration ; and at the summit of the right lung he found a tubular souffle with coarse rales and moist subcrepitus ; the association of these symptoms, the total absence of dulness on percussion and of opacity to Röntgen rays, the good general health of the patient caused him to reject the diagnosis of a cavernous cavity. An examination of the sputum revealed the absence of the Bacillus tuberculosis and of the Streptothrix bronchitidis. Wassermann test gave an negative reaction. The negative result caused him to reject the

diagnosis of tuberculosis, oosporosis and pulmonary syphilis, and he diagnosticated bronchial dilatation, which the autopsy confirmed. A microscopic examination revealed a epitheliomatous transformation of the cells with proliferation of the deeper tissues. Epithelial proliferation is usually found in cases of congenital bronchial dilatation in the newly born and in the fœtus affects the adenoid type. Dr. Garnier recognises, owing to the age of his patient, and the long duration of the bronchial inflammation, that the cells lost their normal type and assumed a cancerous evolution.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

"*Laxamel.*"

"LAXAMEL" presents "Paroleine" combined with a base which renders it acceptable to those who find difficulty in the ingestion of liquid paraffins, and is of particular value in the treatment of the large group of cases of constipation dependent upon deficiency of lubricating material in the bowel. It is well adapted to modify the consistency of dry, hardened fæcal material, and to assist in its evacuation. It can be given to delicate patients without giving rise to unpleasant effects, and it is particularly useful in those many cases in which ordinary laxatives or purgatives are undesirable. "Laxamel" is issued by Messrs. Burroughs, Wellcome & Co. in glass pots.

"*Vaporole*" *Nuclein* 0.03 *gm.* (*gr.* ½).

A HYPODERMIC product presenting, in sterile solution, nuclein 0.03 gm. (gr. ½), a preparation of yeast, is issued under the "Vaporole" brand by Messrs. Burroughs, Wellcome & Co. The hermetically sealed glass container has been specially designed for convenience in hypodermic medication. The use of this nuclein product is intended to increase the bodily resistance to bacterial invasion. Hypodermic injections of nuclein are stated to stimulate leucocyte formation and to raise the opsonic index. Nuclein has been employed in tuberculosis, diphtheria, cancer, endocarditis, and in bacterial affections generally. Reports indicate that the "Vaporole" product has been used with considerable advantage in alimentary toxæmia and in severe nervous prostration with malnutrition and anæmia. "Vaporole" Nuclein is supplied in boxes containing ten products.

THE RIGHT HONOURABLE
SIR CHRISTOPHER JOHN NIXON, Bart.,
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PART I.

ORIGINAL COMMUNICATIONS.

ART. IV.—*An Investigation into the Clinical Value of Staining Urinary Deposits.* By EDWARD SANDWITH JOHNSON, M.D. Univ. Dubl.; Senior Assistant Medical Officer, Sheffield Union Hospital.

THE paucity of work done on this subject and the great prospects which it appeared to afford of throwing light on "morbid conditions of the urogenital tract," by helping in diagnosis, prognosis, and determining progress in these cases, were the features which called me to investigate this question.

I have stained the deposits of nearly 500 urines, over 100 of which were specially selected from patients suffering from urogenital diseases, which yielded almost every pathological possibility.

The only literature on this subject is to be found in *Deutsche medizinische Wochenschrift*, of July 4th, 1912 (p. 1271). This article contains the procedure followed and results obtained from the use of six stains which, up to that time, had been used for staining urinary deposits.

It was delivered at a Medical Clinique at Vienna University, entitled "Methods of Staining Urinary Deposits," by Drs. A. Edelmann and L. Karpel.

I will proceed by giving a translation of this article.

M. Kohn introduces a sudan-hæmatoxylin stain.

The urinary sediment placed on a slide is dried in air and treated with 10 per cent. formalin for ten minutes, and afterwards washed with water. The preparation, so fixed, becomes stained after ten minutes' submersion in a concentrated solution of sudan in 70 per cent. alcohol, and rinsed afterwards from half to one minute with 70 per cent. alcohol. After this re-stain with hæmatoxylin and mount in glycerine.

The fat takes on a red colour.

The cell-bodies a violet colour.

This process is suitable for staining fatty casts.

Leibmann's method is to apply a solution of 2 grains methylene blue in 100 c.cm. 10 per cent. formalin to the urinary deposit, and let this stand for ten minutes. Then wash with water

The hyaline casts stain light blue.

The waxy casts, dark blue.

The cell bodies and bacteria, dark blue.

This method gives no differentiation between cells, but is very suitable for discerning the individual casts.

According to E. Wolff, the deposit is fixed with 10 per cent. formalin and placed in 90 per cent. alcohol for twenty-four hours for further fixation. On the next day restore by means of fresh alcohol ten to fifteen minutes, and apply the stain consisting of hæmatoxylin-eosin for twenty-four hours, wash with water until no discoloration remains, add 5 to 6 drops of concentrated alcoholised eosin solution and after some minutes 90 per cent. alcohol. Mount in Canada balsam.

Cannata washes the deposit with physiological saline, and fixes for two days in "Folscher's solution."

Folscher's solution
- Chromic acid 1 per cent., 25 c.cm.
- Osmic acid 1 per cent., 2 c.cm.
- Acetic acid 1 per cent., 16 c.cm.
- Distilled water, 263 c.cm.

The fluid is then centrifuged, the residue washed with physiological saline, placed on a slide, dried in air, and stained according to "Ziehl."

A. Schott disclosed a method using two staining solutions.

Solution 1.—5 per cent. aniline blue (water free) in distilled water.

Solution 2.—2 per cent. eosin in glycerine with 5 per cent. phenol.

Put 5 drops of solution No. 1 and 6 to 8 drops of No. 2 in the centrifuge tube nearly full of urine, shake well and centrifuge.

The leucocytes stain violet-blue, the nuclei showing up well.

The erythrocytes, brown to eosin red.

Epithelium stains blue.

Nuclei, red.

An accurate cell differentiation is not obtainable, although it yields a good general survey.

Senator's method gives the most useful results.

A drop of urine sediment is spread on a slide, dried in air, and fixed in the Bunsen flame. On this place a drop of Ehrlich's triacid stain for ten minutes and wash with water and then with alcohol. Dry and mount in Canada balsam.

The hyaline casts and protoplasm of the cells becomes stained violet.

Nuclei, blue to blue-green.

Erythrocytes, orange colour.

Although this method is, as stated, the most useful for clinical purposes, the results are not entirely satisfactory. As Senator himself states in the "Encyclopædia of Microscopic Technique, 1910"—"The granulation of the protoplasm and the chromatic structure of the nucleus is not discernable."

All the above methods have taken the chemical state of the urine too little into account. The reaction of the urine is nearly always acid, and this is bound to influence

the staining capacity and shape of the elements in the deposit. A factor worthy of consideration is the precipitation of crystalline and amorphous salts which collect the stain, and not only prevent a good even stain but cloud the field of vision. The washing with physiological saline does not completely obviate this.

The precipitate is not dissolved, and, as far as our experience goes, many of the morphological characteristics are lost.

Proceeding on this assumption, we treated urine with a solution of sodium bicarbonate until the reaction was weakly alkaline.

We proceed as follows :—

Fresh urine is treated with a few drops of bicarbonate of sodium and centrifuged. Then by means of a thin pipette a little sediment is placed upon a clean slide and dried. The air-dried preparation can either be fixed by heating in a copper oven to 100° (Ehrlich's method), or fixed, according to von Jagie, in an acetone bath for ten minutes.

Von Jagie's method is certainly worthy of recommendation for clinical purposes.

The preparations so fixed can be stained with Ehrlich's triacid stain for ten to twenty minutes, wash cautiously in water, dry with filter paper, and mount in neutral balsam.

Thus we obtain good pictures in which the separate elements can easily be distinguished.

The leucocytes stain green.

The eosinophil granules, copper red.

The neutrophil, reddish violet.

The protoplasm of epithelium cells, light red.

The nuclei, green to dark blue.

Red corpuscles, orange.

Spermatozoa—heads, red ; tails, bluish.

This method is especially useful for distinguishing the blood cells and for recognising kidney epithelium, which usually is very difficult.

Weigert and von Jagie agree that it is difficult, if not

impossible, to say for certain what is kidney epithelium in a urinary deposit.

When Romanowski's stains are used the urine should give a neutral, not alkaline, reaction.

Acetone is the best method of fixation for these stains.

Leishman's stain is the one we recommend. Fix for five minutes in acetone and stain for five minutes with Leishman's stain. Then add a double quantity of water, and allow to stand for about two minutes, wash in water, dry with blotter, and mount in Canada balsam. In this manner good pictures are obtained.

The protoplasm of the epithelial cells stain red.

The nuclei of the epithelial cells dark blue.

(The chromatic structure is well marked.)

Kidney epithelium stains deeper blue than bladder epithelium.

Hyaline and epithelium casts stain a good blue.

Spermatozoa and bacteria are also stained.

I commenced to work on this subject by using these stains. I used specially selected urines—that is, urines containing specimens in their deposits which the stain was supposed to show specifically.

The difficulties I experienced, and how I overcame them, I will relate later. Here it is my wish to give a short account of the results I obtained by using the above stains.

1. *Kohn's Sudan-Hæmatoxylin Stain.*

This method is only of use to demonstrate fat, and though the ingredients of urinary deposits are usually undergoing one or other process of degeneration, fatty degeneration is seldom seen. The fat in fatty casts is hard to demonstrate, and this is not the best stain for showing it. Then again the procedure is lengthy and tedious.

2. *Leibmann's Methylene Blue Stain.*

This has the advantage of being easy and short, fixation of the deposit and staining going on concurrently with one application, and only implies one washing, which allows for fixation inefficiencies.

This stain gives a good survey, staining every ingredient of a urinary deposit. The only differentiation between cell-body and nucleus is that the latter is stained slightly deeper. I could not demonstrate its stated quality of staining amyloid material in casts deeper blue. What I found was that casts stained in three degrees with this stain :—

1. Light blue—translucent.
2. Dark blue—translucent (not amyloid).
3. Wedgwood blue solid flakes here and there in casts—sometimes as a striation (probably amyloid).

3. *Schott's Eosin and Methylene Blue.*

This is an excellent stain for the cellular elements, especially blood cells.

The procedure is simple and takes a very short time, since staining and centrifuging are concurrent. Washing the deposit is obviated, the inefficiencies and difficulties of which I will mention later.

Blood cells show as characteristically and completely as in a blood-film stained by Jenner's or any of the Romanowski stains.

All cells, such as bladder, kidney, or tumour cells, stain in direct ratio to their integrity or degeneracy, as the case may be.

4. *Senator's Triacid Stain.*

This method has the obvious drawbacks of needing alkalinisation of the urine and neutral balsam if mounting is desired.

Then again the procedure of washing the stained deposit with alcohol incurs the risk of over-decolorising.

But the results obtained are undoubtedly better with this stain than with any of the above stains.

Every structure in urinary deposit is stained by this method with the fair differentiation between nucleus with its chromatic structure and cell protoplasm; but, as Edelmann and Karpel say, "much is yet to be desired."

I found that—

Nuclei stained blue to purple.

Cell-protoplasm stained dull red.

Red blood cells stain orange colour.

Casts stain pink to cerise.

Leucocytes stain red with purple nuclei and granules—not green as in literature, which differs somewhat from the author's account.

5 and 6. *Cannata's and Wolff's Stains.*

The results I obtained from the use of these stains only compared unfavourably with those obtained from the previous stains, none of which justify a three-day procedure.

The most striking, and at the same time detrimental, feature (and one which cannot be obviated) in the results I have obtained, is the degeneracy of all ingredients of urinary deposits.

It is due to their degeneracy that they are there, and the medium in which they have to abide is not conducive to prolonged integrity. I have seen examples of every stage and type of cellular degeneration in cells from the bladder and kidney, &c.

Cloudy swelling, including karyolysis and karyorrhexis.

Fatty degeneration is demonstrable on almost every slide.

Hyaline and colloid degeneration (that is masses of cells which have grown together into a homogeneous mass).

The cells lose their salient points, shape, and shape of nucleus; then their staining capacity generally goes—a swollen appearance is the first feature, this occurs especially in alkaline urine.

I experienced great difficulty in getting rid of *débris*, crystals (phosphates and urates, &c.), albumen and mucus deposits, around which the stain hangs, obliterating a good view of the cells and important structures in the deposit.

I found the following *modus operandi* fairly successful in surmounting these difficulties.

Use an absolutely fresh specimen. If this is not possible, the integrity of the individual members of the deposit is moderately well preserved for twenty-four hours by adding a few drops of formalin to the urine, which should be kept covered.

If phosphates are present clarify by acidulation.

If urates are present, alkalinise the urine by adding a few drops of sodium bicarbonate which dissolves the urates.

If albumen, mucin, or *débris* is abundant, centrifuge some urine from the bottom of the specimen glass for a few minutes, then pour off the urine, add a few c.cs. of normal saline and centrifuge again (thus washing the deposit).

It is best not to fix by heat if albumen is present since it coagulates and holds the stain.

Another good way of getting rid of *débris* is to wash the fixed deposit with $\frac{1}{2}$ per cent. acetic acid.

A very important item is that the slide should be clean and devoid of grease; this can be obtained by washing the slide with ether or alcohol, perhaps best of all is a weak lysol solution (lysol 2 per cent.).

Filter all stains immediately before use.

The fixation of the film is, perhaps, the greatest difficulty. Fixation by heat damages the cells and fixes the mucus, albumen, and other undesirable ingredients of urinary deposits—thus, when the slide is stained, it looks dirty and a good view of the cells and casts, &c., is prevented.

Fixation by alcohol, acetone, or formalin is not very satisfactory; after a twenty minutes' application part of the deposit is washed off even when the slide is rinsed in standing water.

These formidable difficulties, one or two, at least, of which are present on every occasion, together with the laborious methods prescribed and the indefinite and incomplete nature of results obtained, almost made me condemn and cease to work on this subject.

But there still appeared to be hope along two channels, namely :—

1. To find a specific stain for each and every ingredient present in urinary deposits. Stains to show up amyloid and fatty degeneracy respectively in casts. Stains to show striation and encapsulation of bacteria. Stains to empha-

sise the salient features of the cellular elements found in urinary deposits.

2. To find a quick and easy *modus operandi*, one stain, if possible, which would give a useful broad survey of the ingredients of a urinary deposit, as a help in diagnosis and prognosis of urogenital cases and one which would demonstrate whether or no the more exact procedure of Article I. was desirous or necessary. In other words—a *régime* in staining urinary deposits which might be useful to Clinical Medicine as a routine.

I proceeded along these lines and used all the known stains in the search.

I. (*a*) For the differentiation of *Casts* I used the following stains :—

1. Methylene Blue.	Rough survey.
2. Leibmann's stain 3. Methyl violet 4. Picro-carmine 5. Iodine	Specific stains for lardaceous matter.
6. Scharlach 7. Nile blue 8. Osmic acid 9. Sudan iii. or Kohn's stain	Specific stains for fat.
10. Leishman	For blood casts and cellular casts.

Casts, since they are the most degenerate structures in urinary deposits stain very freely but none the less very characteristically.

The great majority of casts stain as pale, translucent, filmy, structureless cylinders, varying greatly in length, thickness and shape.

Granular Casts differ only in that their contour is less even, disintegration being in process, and they are studded indiscriminately with dots which have stained a deeper shade.

The granulations vary in size and number per cast. High-power one-sixth objective is essential to see the details of casts.

Fatty Casts are identical with these, except that the dots are hollow bubbles unstained unless some special stain is used to demonstrate the fat present in the vacuoles.

Some casts are almost completely composed of epithelial cells of the kidney tubules which appear to be tubules shed intact, and these cells stain perfectly.

There are some casts which have one or two such cells still in their position and retaining their staining capacity.

There are solid casts, composed of blood, and other cells and all kinds of *débris* which have obviously been formed as plugs in kidney tubules.

Then, lastly, there are some which are evidently too degenerate to take up the stain at all—they appear unstained as transparent films.

Amyloid Casts.—Though patients have obviously extensive amyloid disease, in which the kidneys are involved, yet it is far from always possible to demonstrate waxy casts in their urinary deposits.

Even when methyl-violet or picro-carmine, the specific stains for lardaceous matter, is used for staining so-called amyloid casts, very variable and uncertain results are obtained. The whole cast and all casts take on the violet or pink colour, according to the stain used, in varying degrees of intensity (this is probably due to the degeneracy or colloid character of the material of which casts are composed). This faint staining comes out on the application of weak acetic acid, instead of turning blue as it should do.

There are some casts and areas in others which take on the true violet colour of amyloid matter, but these are few and far between. The high-power one-sixth objective shows these best.

When iodine is used much the same happens. All casts present take on a pale orange colour—a few casts and areas in others take on the deep red-brown colour of amyloid.

With Leibmann's methyl-blue stain—a few casts,

stained in bulk light-blue like their neighbours, present non-translucent areas of wedgwood blue. Thus looking like a tube of cloudy amber with clear and cloudy areas alternating, coloured, of course, light-blue and wedgwood respectively.

These areas that I have demonstrated by all the above stains are possibly areas of amyloid matter.

But it is my opinion that there is no such thing as an amyloid cast. If there be such it is, at any rate, impossible to recognise it in a urinary deposit.

The three outstanding features of the casts present in the urinary deposits of the five cases of amyloid disease of the kidney, on whom I have studied, were :—

1. The great number of casts present—the deposit was, in each case, a veritable mass of casts—the film had to be very thin in order to separate the casts enough to see them individually.

2. The extraordinary length of the casts—chiefly three times as long as tube-casts found in any other morbid condition.

3. The similarity of the casts in length, shape, construction, type and staining capacity—nearly every cast present was a true cast of a kidney tubule, long and curled and perfect in shape. The great majority were hyaline casts, just a few were granular or fatty.

These three features present in any one case will always make me think of amyloid disease of the kidney, and they should be of help even if they do not make the diagnosis certain.

Fatty Casts.—Do not fix by heat—use either formalin or 70 per cent. alcohol.

When scharlach is used and the sides are washed with 50 per cent. alcohol after staining, the small fat globules, numerously dotted about these casts, stain a brilliant translucent red colour.

When Nile blue, followed by sulphurous acid, is used, the casts appear as pale-blue films studded with deep-blue dots (these should be mauve).

Osmic acid and sudan stain the fat black and deep-orange respectively.

Though the other stains are more modern and stain fat in all forms, viz., neutral fats, fatty acids and soaps, and give a prettier picture, yet osmic acid, which stains only oleic acid and oleates, is the most certain stain for fat as present in casts, and this is not reliable.

My experience of fatty casts calls for only one remark, namely—that they are far less common than is usually taught or understood. Though a certain number of casts (when unstained) appear to contain fat globules, remarkably few take up fat stains. In my opinion it is more a case of vacuolation and disintegration than fatty degeneration.

Fatty casts occur in many types of urinary deposits, and are generally accompanied by other tube-casts, thus it is probable that they have no pathognomonic significance. If this is the case then it is of no clinical value to distinguish them from other casts.

I found many types of casts besides those mentioned above—solid casts of the kidney tubules, such as blood casts, pus casts, and *débris* casts—solid casts, moulds of the ducts of the prostate, seminal vesicles and Cowper's glands composed of mucus, pus and spermatozoa, &c.—these latter I will describe under the subject of shreds.

It is my opinion, if I may say so, that casts need fresh nomenclature and classification, and are probably deserving of new significance. Though the differentiation of casts by staining is not effective as I had hoped, yet a great deal more can be ascertained with greater certainty by the help of the above stains than by microscopic examination in the ordinary way.

Let me here give instances which go to prove this.

In medicine, a "large white body" connotes "large white kidney"—each of my five cases of amyloid disease of the kidney had not only the typical large white body (even those with concomitant phthisis) but all the other signs and symptoms of chronic parenchymatous ne-

phritis, of which the large white kidney is pathological and pathognomonic.

Repeated examinations of the casts present in a urinary deposit (using the above methods and stains) tell us of the progress of the disease or the progress of the patient, as the case may be, and thus aid in the prognosis of all forms of nephritis.

I. (*b*) For differentiation of *Bacteria* present in urinary deposits, I used the following stains :—

1. Methylene blue	For a general survey.
2. Fuchsin	
3. Gram's stain	For classification purposes.
4. Ziehl Neelsen's stain	For tubercle bacilli.
5. Pughes' stain 6. Löffler's stain 7. Neisser's stain	For diphtheria bacillus (K.L.) and the diphtheroids.

As large a quantity of urine as possible should be centrifuged at least 10 c.c.

All utensils—specimen glasses and centrifuge barrels, &c.—should be sterilised before use. The best method of doing this is to boil them. This is unnecessary if only a rough estimate is needed as to the bacteria present.

Urine can be obtained aseptically from the bladder by using a sterilised catheter, after previously irrigating the anterior urethra with sterile boric acid solution.

Since fixation is best obtained by heat it is necessary to get rid of any albumen present ; it is also very necessary that there should be as little *débris* or crystalline matter as possible present in the deposit, if a satisfactory survey of bacteria is to be made, so it is almost always necessary to wash the deposit with normal saline, sterile in this case, and centrifuge again before making slides.

The best procedure is to make at least three slides. Stain slide No. 1 with methylene blue to ascertain if bacteria are present, and, if so, whether bacilli, cocci, or both, including their shape and mode of clustering, &c. Stain slide No. 2 with Gram's stain to ascertain if the

bacilli or cocci present, as the case may be, are Gram-positive or negative. We are now usually in a position to say what specific stain to use in the case of slide No. 3. If diphtheroids are suspected use Pughes' or Neisser's stain, or if tubercle bacilli use Ziehl Neelsen's method.

The one-twelfth objective with oil-immersion is always used for this work.

I found that bacilli or cocci, and commonly both, were present in a large percentage of urines. Thus it appears that there are non-pathogenic bacteria which normally inhabit the urinary tract.

Then again there appear to be bacilli and cocci present in urinary deposits which have not yet been named or classified—at least their morphological characteristics, &c., do not coincide with any known microbes.

E.g.—There are bacilli and cocci occasionally present in urinary deposits which react indefinitely to Gram, their indecision is apparently two-fold—some of these organisms partially retaining the violet colour of the carbol-gentian violet)—some retain it at one time and not at anoher (they are very easily decolourised).

Then again there are large bacilli peculiarly grouped, *e.g.*, in chains, &c., and many peculiarly striated becilli, probably diphtheroids, though differing from any I have ever seen.

In my work on this section I have identified microscopically the following cocci and bacilli in urinary deposits :—

Staphylococci	B. coli communis
Gonococci	B. typhosus
Streptococci	B. subtilis
Pneumococci	B. tuberculosus
Unknown cocci	smegma bacillus
	diphtheroid bacilli
	(very rarely Klebs-Löffler)
	unknown bacilli

The majority of these are just as easily demonstrated microscopically from urine, as from such *media* as pus

from an abscess or membrane from a throat, &c. So I need not waste much space in relating the individual cases with the respective bacteria found.

I should like just to state that the difficulty in the case of tubercle bacilli can be greatly lessened by getting rid of the pus present in the urine, which prevents satisfactory centrifugalisation of the organisms and obliterates them from view when the slide is made. This can be done by pouring off superfluous urine and adding one-quarter as much antiformin (30 per cent.) as there is pus, shake this for a few minutes and leave till the pus dissolves, then dilute and centrifuge. This also destroys all bacilli except tubercle, including smegma, thus obviating the decolorisation with alcohol.

Pughes' stain is the best for differentiating the diphtheroids, the striation or polar bodies, as the case may be, are well shown and the *modus operandi* is very simple, viz., to a fixed smear add a few drops of the stain for a few minutes (3-5), then wash off and dry between blotting paper.

By far the commonest cause of primary bacilluria and spontaneous cystitis, which are exceedingly common complaints among senile and prematurely senile patients of whom we see so many among the poorer classes, is the Bacillus coli communis.

Other organisms, however, may be responsible for precisely similar lesions and symptoms, and some may easily be mistaken for Bacillus coli communis if only a casual investigation is made into their nature.

An instance of this forms the basis of a paper entitled "Infection of the Urinary Tract by the Bacillus lactis aerogenes," by J. A. Luetscher, M.D., in the Johns Hopkins Hospital Bulletin for 1911, page 361, in which two cases are described. Case 1 was a woman suffering from cystitis which was at first thought to be due to Bacillus coli communis. Case 2, a man who had a urethritis, with yellow discharge, which might easily have been put down to gonococci. But in each of these cases

the Bacillus lactis aërogenes was found in pure culture in several consecutive examinations.

The condition lasted for four weeks with a marked tendency to recurrence whenever urotropin was omitted. Later cultures were negative. Case 2 was so seriously ill, yet physical examination revealed nothing, that septicæmia or enteric fever was suspected, but blood culture and Widal gave no help. It was only on full bacteriological examination of the urine that the diagnosis was made, the treatment instituted and the cases were cured.

The organism was a small encapsuled bacillus with rounded ends Gram-negative and non-motile.

When such cases are correctly diagnosticated and put on urinary antiseptics they usually clear up within a month, when not correctly diagnosticated such cases soon become chronic and daily run the risk of the infection spreading and producing pyelitis, &c.

I found borovertin or urotropin the best drug for this purpose. Though it is not always possible to say for certain *viâ* the microscope what bacillus from the morphology is causing the trouble, yet I hope I have shown by what I have said that a great deal can be learned by such means which is both instructive and useful.

Culture of organisms and inoculation of guinea-pigs can be resorted to if necessary.

For many years it has been customary to examine urine microscopically in suspected cases, for gonococci—B. typhosus, and the tubercle bacillus. Why should these three be separated from their many equally injurious and common colleagues? The answer is that the value of staining urinary deposits has not yet been properly emphasised.

I. (c) *Shreds in Urine.*—Before I could do any work on this branch I had to seek a definition and a classification of shreds. The shortest and most graphic and recent literature I could find was an article by L. G. Gunn, F.R.C.S.I., in the *Medical Press* of April, 1912.

I will give a short *résumé* of it here—just those parts

that were of help to me. Shreds in muddy urine are usually from the kidney, ureter or bladder, and it is chiefly due to the disintegrated shreds that the urine is not clear.

Shreds in clear urine are casts formed in or about the urethra, and carried out with the stream of clear urine.

There are five possible places in the urethral tract for such shreds to form.

1. The surface of the mucous membrane of the urethra. Two kinds of shreds are formed from this—(*a*) large blobs with tails of muco-pus floating from them if the amount of pus is great; (*b*) moulds of the shallow folds if the amount of pus is small.

Microscopic examination shows their composition to be epithelium, mucus, pus and bacteria.

2. Seminal vesicles and ducts thereof. Five different types of shreds are formed here. Three of these are found in normal urines, skins, sugar and sago bodies respectively, composed of columnar epithelium, mucin and spermatozoa.

The other two forms are abnormal—(*a*) the so-called casts like bunches of grapes; (*b*) vesicle shreds—long and thin from the ejaculator ducts containing pus-cells and bacteria.

3. Prostate and its numerous ducts. Here two kinds of shreds are formed, both indicative of disease—(*a*) a large coarse pus thread formed from ducts altered by acute inflammation; (*b*) comma-shaped threads very common and indicative of the last stages of chronic prostatitis.

4. Cowper's glands.

5. Glands opening into the spongy part of the urethra. There are two types of shreds formed here, both equally common—(*a*) thin shreds made of flat rolls of epithelium, pus and non-pathogenic bacteria—these shreds occur in normal urine; (*b*) comma-shaped shreds like those from the prostate formed of pus, mucus and bacteria.

I confined my work on shreds to the abnormal variety, and since their abnormality seems to be in direct ratio to

the bacteria they contain I commenced by a search for bacteria in shreds.

I worked with urines of cases of gonorrhœa of all stages. I found shreds in about sixty per cent. of the cases, most prevalent in the chronic cases and the recent cures.

The commonest bacteria present in shreds are :—

1. Staphylococcus aureus.
2. Diphtheroid bacilli.
3. Gonococci.
4. B. coli.
5. A large Gram-positive coccus.
6. A doubtfully reacting diplococcus.

From what I have said it is obvious that our knowledge on the subject of shreds has been greatly augmented by staining them before examination, and if any further insight into the formation, composition and significance of shreds is possible, it is *viâ* stains we shall derive that knowledge.

I. (*d*) For the differentiation of *Cells* present in urinary deposits, I used the following stains :—

1. Methylene blue.
2. Fuchsin.
3. Jenner's stain.
4. Giemsa's stain.
5. Leishman's stain.
6. Triacid stain of Ehrlich.
7. Schott's stain.

Nos. 1 *and* 2 stain every cell present in a urinary deposit, the nuclei staining deeper than the protoplasm, so a good general survey is obtained.

If the differentiation is not sufficient one can at least say whether or no it is desirous to proceed with other stains.

Nos. 6 *and* 7 I have already described in the early part of this work.

Nos. 3 *and* 4 are excellent stains and give as good results as is possible under the circumstances.

No. 5—Leishman's stain—is much the best stain for the cellular elements in urinary deposits. The procedure is quick, easy, and the results are better than those obtained by any other stain.

The differentiation between nucleus and cell protoplasm is good—the former stains a damson colour, the chromatic structure showing up well, the latter staining amethyst. By this method kidney epithelium is stained a deeper shade than bladder epithelium, which is a very useful feature. Casts stain blue. Blood cells are beautifully shown and easily distinguished. Spermatozoa and bacteria also show up well.

Most of the cells in the deposit of a fresh urine are as easily and characteristically stained as the cells of paraffin sections, &c.

Blood and tumour cells give no chance of being mistaken, and after a little practice one gets an estimate of the different epithelium cells possible in a urinary deposit, and it becomes quite easy to say from what part of the urogenital tract any epithelium cell has come.

I will say more about the cellular elements in urinary deposits when summing up.

II. *The wet method.*—During my work on this subject I used almost every known stain in the search for a simple, quick and effective method of staining urinary deposits adaptable as a routine.

The stain which most adequately fulfilled these conditions was a stain composed of equal parts of methylene blue and polychrome methylene blue (chromatised old methylene blue), and the method I have called the "wet method" proceeds as follows:—Take up with a pipette some sediment from the bottom of the specimen of urine for examination. Apply a drop of this to a slide, which has previously been washed with a 20 per cent. lysol solution, spread over the slide with the flat of the pipette or

with the edge of another slide, then dry in air and fix in the flame or with ten per cent. formalin.

If the sediment is small in quantity then centrifuge for a few minutes.

If abundant with crystals, *débris* or albumen, centrifuge a few c.cs. of urine taken from the bottom of the specimen glass, pour off the urine, wash the deposit with normal saline, and centrifuge again.

If urates are present, add a little sodium bicarbonate.

If phosphates are present, a trace of acetic acid should be added, washing with normal saline. Make a film and fix as mentioned above.

When the film is dry apply a few drops of the stain and cover immediately with a clean cover glass and press between blotting paper. Then the slide is ready for immediate examination under the microscope with either low power or high power.

The following are the six specially valuable features of this method :—

1. The whole procedure takes but a few minutes (10-20) inclusive of centrifuging (which is far from always necessary), and the microscopic examination.

2. It stains everything in the deposit which will stain by any method used in this work.

3. It is the neatest *modus operandi*, with least labour; there is no washing of the film after staining, thus the fixation difficulties are obviated.

4. It enables the oil immersion lens (one-twelfth objective) to be used, which is essential if bacteria are to be seen or accurate estimates made of types of cells present or any specificity of staining to be appreciated.

5. It gives at least as good, if not the best, differentiation between nucleus, with its chromatic structure, and cell-protoplasm and cell-wall.

6. By this method the ingredients of the deposit are magnified—this feature being especially useful in bacterio-

logical examination of urinary deposits, *e.g.*, it greatly helps in showing up the shape and capsules of bacilli and the striation of the diphtheroid group if a drop of 1 per cent. acetic acid is allowed to run under the cover glass (whilst the examining eye is still at the eye-piece), the acetic acid is seen to dissolve the stain from the bacillus sooner than from the striations, and this intensifies the latter.

Thus after a fifteen minute procedure one is able to name, with a fair amount of accuracy, the ingredients present in a urinary deposit; or one is, at least, in a position to say whether or no anything further could be ascertained by using some of the specific stains which I have described in the early part of this paper.

For instance, if there are cells present which suggest a tumour of the tract use Senator's or Leishman's stains. Or if there are microbes present, of which it would be desirous to know more of the morphology, then it would be necessary to resort to Gram's stain and sterile vessels, &c.

Since polychrome methylene blue is not a stable stain to keep made up, ordinary methylene blue may be used as described above with as good results, except that there is not so marked a differentiation between cell-body and nucleus.

As a summary on my work I wish to state a few cases and give a few instances which go to prove the desirability, if not the necessity, of staining urinary deposits.

Let me first take the subject of casts. As I have already mentioned, it appears to me that casts need new nomenclature and are deserving of more and probably new significance, but this we must leave to the future.

Casts of all kinds are a great deal more common in urine than is at present generally understood. I found casts in about seventy per cent. of the urines I examined, which included a large number of normal or so-called normal urines.

Here may I ask, what is a normal urine? The answer is—A urine of normal colour and specific gravity, con-

taining no albumen, pus or other abnormal ingredient which would be found by the present routine method of examining urine.

This is not correct. A urine cannot be designated as normal unless the deposit has been stained.

Let me give some instances to prove this. The urines of convalescent typhoid cases appear normal enough and give no reaction to any of our routine urine tests. It is bacteriological examination which reveals them teeming with B. typhosus.

In my own work I had four striking instances of this fallacy. In each case the urine was reported as normal by the Sister in charge who tests the urine on admission and each week following.

Three of these cases, though they had comparatively no symptoms, had serious urogenital diseases, which turned out to be :—

(1) Cystic kidney.
(2) Stone in the kidney.
(3) Late tubercular kidney, respectively.

In the last case the diseased kidney had ceased to functionate and had become partially shut off.

It was only after staining the urinary deposits and finding a few casts, pus and blood cells, and ureter epithelium, &c., that I was able to locate the disease and ultimately to diagnosticate the cases.

The fourth case was one of phenol poisoning, and though the urine was never characteristically green, yet by staining I found abundant casts in the urine from the third day for many weeks.

Then, again, there are casts of all kinds present in the urine of athletes after any strenuous event, especially efforts of long duration, and though these clear up in thirty-six hours, yet it is important to recognise their presence, and this is best done by staining the urinary deposit.

Lastly, a few words on the cellular elements found in urinary deposits.

Take cases of hæmaturia—these are common and vary widely in the cause thereof.

A good microscopic picture of the urinary deposit (such as is obtained by staining) is very useful and instructive in these cases and often determines the diagnosis of the case. For instance, where the hæmorrhage is due to cancer or some other tumour of the tract, not only are tumour cells present in the deposit, but also specific cells from the locality of the growth are liberated by the local inflammation.

Where toxic agents or poisons are the cause, cells from all parts of the tract are present. There were epithelial cells from ureter, urethra, bladder and kidney in the case of phenol poisoning which I mentioned earlier in this paper.

Parasitic causes of hæmaturia are usually easily demonstrated in urinary deposits, *e.g.*, filaria sanguinis hominis, echinococcus, ova of bilharzia.

Then again, where only blood cells are present, one has to think of the cases Klemperer and Harris described and called "renal epistaxis."

Examination of the urinary deposit immediately differentiates between hæmaturia, hæmoglobinuria and lymphuria.

The last-named cases are rare, generally occurring in children as intermittent albuminuria with constipation. These cases are usually diagnosticated by the fact that there is no globulin in the urine, but the urinary deposit is very characteristic—an abundance of young lymphocytes are present with only here and there a red cell or polymorphonuclear leucocyte. These show up perfectly when stained.

A patient under my care, suffering from chronic cystitis, suddenly developed a swinging temperature and rapid pulse, and as I suspected pyelitis had set in I did daily

examinations of his urinary deposit, and it was instructive to see the different cells appear as the infection spread up the tract. No longer the monotonous pus cells with here and there a degenerate bladder cell, but fresh epithelial cells from ureter, pelvis of the kidney, and kidney, blood-cells, and solid pus casts of kidney tubules showed themselves as the case became one of pyelonephritis.

Another memorable case of mine was a man who was obviously suffering from malignant disease somewhere. The question was, where? His urine was scanty and he passed it frequently in small amounts, occasionally there was a little blood in it, but these are common signs. After frequent examination of his urinary deposit, one day I demonstrated tumour cells. A month later there was a palpable growth, which turned out *post-mortem* to be malignant, situated in the fundus of the bladder and only fungating over a small area of the roof on the inner surface of bladder. It was in a difficult place to see cystoscopically and would have been diagnosticated late by this method.

In conclusion I can only say that to see such pathological evidence of disease of the urinary tract as I have mentioned, whilst the patient still lives, is often as conclusive as pathology after a *post-mortem*, and in my opinion the cases of urogenital disease discovered or correctly diagnosticated for the first time in the *post-mortem* room would be greatly lessened if urinary deposits were stained before examination.

Examination of the urine of all patients has been routine for centuries. Since now, however, the microscope is so universally used, staining urinary deposits should become routine in clinical medicine.

ART. V.—*Clinical Report of the Rotunda Hospital for One Year, November 1st, 1912, to October 31st, 1913.*[a] By HENRY JELLETT, M.D. (Dubl. Univ.), F.R.C.P.I., Master; and DAVID G. MADILL, M.B. (Dubl. Univ.), and R. MARSHALL ALLAN, M.B. (Edin. Univ.), Assistant Masters.

MIDWIFERY REPORT.

(*Continued from page 37.*)

I wish now to refer to some cases of special interest:—

CASE I.—*Inversion of the Uterus.*—A. W., aged thirty-one, in her fifth pregnancy, was admitted on the 28th of January. Her health during pregnancy had been normal, and her condition on admission was normal, except that there were specific sores round the anus and vulva. The child was delivered spontaneously, and twenty minutes after its birth the staff nurse, who considered that the placenta was in the vagina, tried to express it. She did so when the uterus was contracted, and, after she had failed to get the placenta out, she was satisfied that the uterus was in its proper position. The Sister was sent for; she found the uterus relaxed, and rubbed it up, and produced a contraction. She then again tried to express the placenta and failed. The bladder was full, and was catheterised, ten ounces being removed. The uterus at this time was contracted, and expression was again tried. The hard fundus was felt to yield under the fingers, and a round mass appeared below. This was first thought to be the placenta until the inverted uterus was seen behind it. There was very little hæmorrhage before inversion, but after inversion there was some, but not a great deal. I was sent for, and on arrival found the uterus completely inverted, the placenta being still adherent to the fundus. The placenta was quickly removed, and the uterus then replaced manually, the part just above the cervix being replaced first and the fundus last. The utero-vaginal cavity was then

[a] Read before the Section of Obstetrics in the Royal Academy of Medicine in Ireland, on Friday, May 22, 1914.

plugged with iodoform gauze. In replacing the uterus the peritoneal edges of the funnel were steadied by pressure from above. The cervix was also caught with bullet forceps, but these pulled out. Any direct pressure on the fundus showed that the latter was very thin, and that the finger could easily push a passage through it if much pressure was made. The patient made an uninterrupted recovery except for the occurrence of a slight rigor on the third evening.

Case II.—*Rupture of the Symphysis Pubis.*—N. M'A., aged thirty-two, first pregnancy, was admitted on the 23rd of August. She was sent from the country, with a history of having been in labour for thirty hours, the membranes having been ruptured for twenty hours, and she stated that two unsuccessful attempts at delivery by the forceps had been made. On admission the uterus was contracted rather tightly round the child. The os was three-quarters dilated, the head being at the brim, but not fixed. The fœtal heart was not heard. There was no marked pelvic contraction, and, as the patient's general condition was good, she was given a quarter of a grain of morphine, and allowed to rest for six hours. Further examination then showed that there had been no advance of the fœtal head, and that the os was in the same condition as before. The pains were getting weak and short. The forceps was applied, and after some traction the child was delivered. During the traction a crack was heard, and on examination the symphysis was found to be separated in front. The upper and lower ligaments had held, but there was a yielding of the rest, so that the bones were sufficiently separated to allow a finger to be pushed between them. During the separation a vaginal tear occurred on the right side of the clitoris. This was repaired, the vagina was plugged, and a pubiotomy belt applied. The patient made a satisfactory recovery, and experienced no subsequent difficulty in walking.

Cases III. and IV.—*Ovarian Thrombosis and Pyæmia without Thrombosis.*—In two patients suffering from pyæmia operation was performed. One of these patients died, and as I have already recorded her case in my paper dealing with this subject, I will not again refer to it. The

second case is, however, so remarkable as to justify description. M. M'C., aged twenty-seven, third pregnancy, was admitted on the 13th of March. The child was born spontaneously and without trouble. She was vaginally examined twice by the probationer nurse. On the second evening after delivery she had a rigor, the temperature reaching 103° F., and the pulse 120. From that time on to the fourteenth day she had recurrent rigors, her temperature reaching between 103° F. and 104° F., and her pulse varying between 70 and 140. On the fourth morning she received a uterine douche, and a culture was taken. Nothing was found in the uterus, and the cultures were negative. A second culture, however, showed the presence of diplococci. I examined the patient on the sixth morning and could find nothing that suggested thrombosis. She received stock and autogenous vaccines regularly throughout. On the thirteenth evening I again examined her and could not find any evidence of thrombosis. On the fifteenth day, however, her condition was becoming so serious that I decided to operate, thinking, perhaps, that there might be thrombosis which I could not feel bimanually. Accordingly I opened the abdomen. Careful examination did not reveal thrombosis anywhere, and the uterus appeared apparently normal. The veins in the right broad ligament were dilated, and were evidently those which were draining the placental site. On account of the apparently normal appearance of the uterus, I did not think that hysterectomy was advisable, and I decided to tie the veins that were apparently coming from the placental site. Accordingly the ovarian veins were tied at the infundibulo-pelvic ligament on each side, and were divided. At the same time an opening was made from the pouch of Douglas into the vagina, and the latter was plugged with iodoform gauze, the end of which passed down into the vagina. The result of the operation was very marked. All rigors ceased, and the temperature of the patient, which had been fluctuating to the extent of from five to six degrees in the twenty-four hours, almost immediately settled down. On one occasion subsequently it was 101° F., but with that exception it remained practically normal. The pulse rate followed a very similar course. The evening before operation it was 132, and the morning of the operation it was 80. Subsequently it never rose above 100, and almost immedi-

ately settled down below the 90 level. The patient left the hospital about three weeks later in a satisfactory condition.

Case V.—*Rupture of an Ovarian Adhesion, Internal Hæmorrhage.*—H. M., aged thirty-four, in her seventh pregnancy, was admitted on the 1st of November. She was twenty-two weeks pregnant, and had been sent up from the country, with the vagina plugged on account of hæmorrhage. When the plugs were removed there was very little bleeding. For the next four days bleeding was very slight, and the patient's condition improved, so that her pulse, which was 120 on admission, fell to 80, and both it and the temperature remained normal. As she seemed so much better, and especially as she was anxious that nothing should be done to interrupt the pregnancy, no special treatment was adopted. On the fifth morning after admission, however, about 5 a.m., the patient said she felt cold, and shortly afterwards came into labour. She delivered herself easily at 8 a.m., and the placenta followed immediately. The uterus contracted down tightly. About 2 p.m. the patient was looking well, her pulse being then 120, with the uterus well contracted. About 5 p.m., her condition having still further improved, and the pulse being stronger, she was moved across to the Lying-in Ward from the Labour Ward, as she was complaining of the discomfort of the labour couch. After being moved she again became a bad colour and appeared to be comatose, the pulse being scarcely perceptible. Pituitary extract, ether, and strychnine were administered hypodermically, and saline infusion was given. In spite of this treatment, however, she gradually got weaker, and died in ten minutes. The *post-mortem* examination showed that death resulted from hæmorrhage into the peritoneal cavity, and that the hæmorrhage in all probability came from an ovarian adhesion which had ruptured when the uterus contracted. There was only a normal amount of blood lost externally after the birth of the fœtus.

TABLE VIII.—*The Use of Pituitary Extract, Indications, &c.*

Indications	Number of Cases	Para		Method of Delivery		Result to Child	
		Primiparæ	Multiparæ	Spontaneous	Forceps	Alive	Dead
Primary inertia	8	2	6	7	1	7	1*
Secondary inertia	56	41	15	49	7	52	4*
Placenta prævia	4	1	3	4	—	2	2
As prophylactic in cases of previous P. P. H.	2	—	2	—	—	—	—
Induction of labour—							
Alone	—	—	—	—	—	—	—
Combined with other methods	2	—	2	2	—	1	1 macerated

* Two patients with dead children had contracted pelves.

TABLE IX.—*Pituitary Extract, Number of Injections, &c.*

Indications	Number of Injections			Average duration of Labour before Injection		Average interval till Birth of Child		Average Length of 3rd Stage	
	One	Two	Three	Primiparæ	Multiparæ	Primiparæ	Multiparæ	Primiparæ	Multiparæ
Primary inertia -	7	1	—	20 hours	13 hours	2 hours	40 mins.	20 mins.	18 mins.
Secondary inertia-	48	7	1	19 hours	7 hours	22 mins.	11 mins.	18 mins.	11 mins.

Table X.—*Morbidity—B. M. A. Standard.*

	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total
Total Deliveries	142	164	159	141	176	180	163	160	147	185	167	158	1942
Cases Morbid -	16	14	5	9	11	11	9	10	9	8	10	6	118
Percentage -	11.26	8.53	3.14	6.38	6.24	6.11	5.52	6.25	6.05	4.32	5.98	3.79	6.07

Total number of morbid cases - 118
Total percentage morbidity - 6.07
Total average morbidity - 1 in 16.45

Table X. A.

Comparison of Morbidity in Primiparæ and Multiparæ.

PRIMIPARÆ.

——	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Total
Total deliveries	46	49	66	51	60	72	64	69	61	66	59	56	719
Cases Morbid	6	4	3	4	7	5	8	7	6	3	6	3	62
Percentage -	13.04	9.16	4.54	7.84	11.66	6.94	12.5	10.14	9.83	4.54	10.16	5.35	8.62

Total average morbidity - 1 in 11.59
Total percentage morbidity - 8.62

MULTIPARÆ.

Total deliveries	96	115	93	90	116	108	99	91	86	119	108	102	1223
Cases Morbid -	10	10	2	5	4	6	1	3	3	5	4	3	56
Percentage -	10.41	8.69	2.15	5.55	3.44	5.55	1.01	3.29	3.48	4 20	3.70	2.94	4.57

Total average morbidity - 1 in 21.83
Total percentage morbidity - 4.57

Table X. B.—*Extra-genital Causes of Morbidity*

Mastitis	4
Influenza	1
Influenzal pneumonia	1
Parotitis	1
Lobar pneumonia	1
Phthisis	1
Pyelitis	1
Cystitis	1
Tonsillitis	1
Septic dactylitis	1
Total	13

TABLE X. C—*Operative Cases showing Morbidity.*

Nature of Operation	Number of Cases of each Operation	Number Morbid	Percentage Morbidity	Average Morbidity	Remarks
Application of Forceps -	64	14	21.87	1 in 4.57	Three were associated with pubiotomy
Manual removal of placenta -	26	7	26.92	1 ,, 3.72	Includes one pubiotomy case and one forceps case
Unavoidable hæmorrhage -	12	7	58.33	1 ,, 1.71	Three of these cases were fatal. See Table XV. One was associated with mastitis
Pubiotomy - - -	3	3	100	1 ,, 1	—
Version - -	26	1	3.84	1 ,, 26	—
Suture of lacerated perinæum	479	41	8.55	1 ,, 11.68	Eight of these were associated with forceps
Cæsarean Section (conservative) -	7	3	42.85	1 ,, 2.33	Two cases were fatal. See Table XV.

Table X. D.—*Duration of Stay in Hospital of Morbid Cases.*

Under 10 days	49 cases,	including	8 deaths *
10–19 „	50 „	„	1 death
20–29 „	11 „	„	—
Over 29 „	8 „	„	2 deaths
Total	118 „	„	11 deaths

Table X. E.—*Duration of Temperature.*

Under 5 days	72 cases,	including	6 deaths *
5–9 „	26 „	„	1 death
10–19 „	15 „	„	1 death
Over 19 „	5 „	„	3 deaths
Total	118 „	„	11 deaths

Table X. F.—*Highest Temperature Recorded.*

Below F. 100°–	6 cases,	including	6 deaths *
100°–100.9°	43 „	„	2 deaths
101°–101.9°	23 „	„	—
102°–102.9°	23 „	„	1 death
103°–103.9°	12 „	„	—
104° and over	11 „	„	2 deaths
Total	118 „	„	11 deaths

* Six of these deaths occurred within a few hours of admission.

Table X. G.—*Treatment of Morbid Cases of Genital Origin.*

Utero-vaginal douching	38 patients
Administration of vaccine	25 „
Extirpation of thrombosed ovarian vein	1 patient
Ligature of ovarian veins	1 „
Hysterectomy	2 patients

Table X. H.—*Utero-Vaginal Douches.*

30 patients had	1 douche
6 „ „	2 douches
1 patient „	3 „
1 „ „	4 „
Total 38	

TABLE X. I.—*Number of Injections of Vaccine in each Patient.*

No. of Injections	No. of Cases	Results	Remarks
1	6	1 death	Death was from peritonitis in case of Cæsarean section
2	3	All recovered	One was a case of croupous pneumonia treated with pneumococcal vaccine; one was of mania
3	3	1 death	Death from influenzal pneumonia
4	3	All recovered	—
5	2	Do.	—
6	1	Recovery	—
7	1	Do.	—
8	2	1 death	Death was in case of extensive thrombosis
10	1	Recovery	Abscess of breast
11	1	Do.	—
12	2	Both recovered	One was case of subacute arthritis, the other of thrombosis

TABLE X. J.—*Nature of Infection and of Vaccine in Cases in which Vaccine was used.*

No of Cases	Infection	Vaccine Used		Results	Remarks
11	*Streptococcus*	Stock	8	7 recovered	In the fatal case there was thrombosis of ovarian and iliac veins
		Do. and autogenous	2	Recovery	Serum was given in 1
		Do. and stock *St. aureus*	1	,,	—
3	*St. aureus*	Autogenous	1	,,	Subacute arthritis
		Stock *Strepto.*	1	Death	Peritonitis
		Do. and Stock *St. aureus*		Recovery	—
4	*Streptococcus* and *St. aureus*	Stock *Strepto.*	2	,,	—
		Do. and Autogen. *Strepto.*	1	,,	—
		Do. and Stock *St. aureus*	1	,,	—
1	*Streptococcus* and *gonococcus*	Stock *pneumococcus*		Death	Death from influenzal pneumonia; very ill when admitted
1	Pneumonia	,, ,,		Recovery	Croupous pneumonia No genital infection
5	Undiscovered	Stock *Strepto.*	4	,,	Serum given in one, breast abscess in one
		Stock *Strepto.* and Stock *St. aureus*	1	Recovery	—

(To be continued.)

Case 1. Fig 1.

Case 1. Fig 2.

ART. VI.—*Pseudo-Hypertrophic Muscular Dystrophy: Two Cases with plates.* By A. F. BERNARD SHAW, M.D., D.P.H.; Assistant S.M.O., Cardiff. (Illustrated.)

THE two cases of this disease described below have been under my observation for the last year, and may be of interest as the patients were brothers.

Family History.—The father and mother have been always healthy people. They have three children; two sons—Case I., aged 10 years, Case II., aged 7 years, and a girl aged 1 year. Both boys are affected; the girl is normal. There is no history of any similar affection on either the paternal or the maternal side of the family. The mother has had no miscarriages or abortions.

Personal History.—Case I.—A full term child; labour normal. He was quite healthy until 12 months old, and was beginning to walk. At this time he fell out of a perambulator on the back of his head, but without harmful effect; 6 months afterwards he had "inflammation of the brain." When he recovered he remained "weak on his legs," and at 2 years old swelling of his calves was first noticed by his parents. Since then "he has never walked properly and is always falling." He first went to school at 8 years old, but was permanently excluded three months later because "he was always falling and could not go upstairs." From the time that the disease was first observed he has become progressively worse.

Case II. A full term child; labour normal. Until 4 years old he is said to have been perfectly healthy and able to walk. Then it was noticed by his parents that he was beginning to waddle and to fall easily. He has been attending school regularly since 6 years of age.

In each case the history leaves it difficult to determine the exact time of onset; in Case I. the condition apparently started between one and two years of age; in Case II. about the fourth year.

Byrom Bramwell has drawn attention to this difficulty,

and has labelled the age at onset in eighteen out of thirty-two cases as "the first three years of life," the remainder being distributed between three to nine years of age.

Case I.—When standing, the legs are kept far apart, the chest is flattened antero-posteriorly, the shoulders are thrown back, and the abdomen protrudes. The spine shows considerable lordosis in the lumbar and lower dorsal portions with compensatory kyphosis in the upper dorsal and cervical regions. A plumb line from the latter scarcely falls behind the glutei. The lordosis disappears on sitting down and is replaced by some kyphosis. The boy cannot stand on tip-toe, and when in a recumbent position on the floor he is unable to rise. Gait is slow and waddling; equilibrium is easily disturbed; walking can be performed without assistance, but help is much preferred. He can make no attempt at going upstairs and has to be carried up to bed at night.

Of the enlarged muscles those of the calves are most evident. When first examined each calf measured $11\frac{1}{2}$ inches in its greatest circumference; in one year the right calf had enlarged to 12 inches, the left to $12\frac{1}{8}$ inches. The hypertrophy is not of normal outline since the contour is elliptical with the maximum convexity over the middle of the calf.

The infraspinatus shows moderate hypertrophy, the supraspinatus, deltoid and triceps a lesser degree. The erector spinæ stands out prominently, the gluteus maximus is large and firm, and the hamstring muscles exhibit some increase.

Of atrophic muscles the latissimus dorsi and pectoralis major (sternal portion) are most affected; the biceps is slightly wasted. "Loose shoulders" are well-marked. The extensors of the knee—more particularly the vastus internus—are atrophic.

The rest of the musculature shows no obvious change, and the tongue, neck and face muscles are unaffected.

There has never been any indication of fibrillation.

Case 2. Fig. 1.

Case 2. Fig. 2.

A large ent-epicondylar process is present on the right humerus. Viscera are normal.

Of reflexes—The abdominals and cremasterics are present. The knee jerks and Achillis jerks are absent. The plantars are present and definitely flexor in type. No knee or ankle clonus. Vesical and rectal reflexes are normal. There is no alteration in sensation, and no vasomotor changes. The optic discs and retinæ are normal. No Rombergism and no evidence of inco-ordination. The mental condition is dull and backward, but there is no mental deficiency. Muscular weakness is very apparent as shown by inability to perform certain movements, the ease with which equilibrium is disturbed, and the feeble resistance offered to flexion and extension of the legs. The hand-grip is paretic though no noticeable alteration can be detected in the muscles concerned.

Case II.—This boy is not so severely affected as his brother. In the erect position the legs are placed far apart, the shoulders are thrown back, the abdomen protrudes, and the chest is slightly flattened. Lordosis is apparent and disappears on sitting down. The plumb-line does not fall behind the glutei. He can stand on tip-toe, but with some difficulty. He sits down on a chair with a "flop," but rises slowly and by "climbing out," *i.e.*, he lays hold of any object near him and pulls himself up. Placed on his back on the floor he gets up by the method described by Gowers—some stages of which are shown in the plates (Case II., Figs. 2, 3, 4, and 5). He can go upstairs to some extent, but apparently cannot accomplish more than four or five steps. With the bannisters on his left side he proceeds as follows :—Leaning against the rail he holds it with his left arm and hand, at the same time he swings the right leg on to the first step. The right hand is now placed on the right knee, and by pressure the knee is extended, thus enabling the left foot to be brought on to the same step. These movements are then repeated for the next step.

His method of walking might well be called "goose-gait. The shoulders are thrown back, the toes are turned inwards, and the foot is raised well off the ground at each step. These movements impart a waddling motion. He requires no assistance in locomotion, but his equilibrium is easily disturbed.

The calves show the same characteristics as those of his brother, but to a lesser degree. The maximum circumference of each calf was $9\frac{1}{2}$ inches, which increased in the year to $10\frac{3}{4}$ inches. The other hypertrophic muscles are—the infraspinatus, supraspinatus (?), erector spinæ and gluteus maximus; to a smaller degree the deltoid, triceps, vastus externus, hamstrings and supinatorlongus.

The latissimus dorsi and sternal portion of the pectoralis major are the most wasted, and next to these the vastus internus and biceps.

The cervical, facial and other muscles are normal; the tongue possibly shows some hypertrophy, but this is doubtful. "Loose shoulders" are evident enough. There has never been any fibrillation.

Of reflexes—the abdominals and cremasterics are normal. The knee jerks are absent; the Achillis jerks are present, but diminished to an equal extent on both sides. The planters are definitely flexor in type. There is no knee or ankle clonus and the sphincters are unaffected. Sensation is unaltered and there are no vasomotor changes. The optic discs and retinæ are normal. There is no Rombergism or sign of inco-ordination. The mental condition is one of brightness and average intelligence.

One of the most evident features of this type of muscular dystrophy is the pronounced muscular weakness which accounts for the inability to perform certain movements and the facility with which equilibrium is disturbed. That it is not due to loss of muscle sense—as in tabes—is obvious. The state of the reflexes is interest-

Case 2. Fig. 3.

Case 2. Fig. 4.

Case 2. Fig. 5.

ing: their presence or absence depending more or less directly on the integrity of the muscles concerned in their production. Bramwell found the knee jerk absent in sixteen out of thirty-one cases; the Achillis jerk present in thirteen out of fourteen cases, and states that the Achillis jerk may be present when the knee jerk is absent. This is so in Case II. The plantar response is usually present, a Babinski reaction is very rare. The sphincters are seldom affected.

The only known ætiological factor in Pseudo-hypertrophic Muscular Dystrophy is heredity, the influence of which is very decided. In his series of thirty-two cases Bramwell found only one in which more than one generation was attacked, and even this was doubtful. In about half the cases the disease existed in one or more members of the same generation—that is to say, the condition was familial; in the remainder there was no history of direct or collateral hereditary influence. Thus direct heredity was apparently negligible in this series of cases, whilst the familial tendency was very marked. Other observers, however, have reported examples of direct heredity. It is also known that the female is capable of transmitting the disease though she may not herself be affected. In other reported cases where the disease has been familial it has been limited entirely to one sex. Meryon cites an example where all the males were attacked whilst the females escaped.

Clinically, therefore, we may recognise the following hereditary conditions—two or more of which may be combined in any one case:—(1) direct heredity; (2) familial incidence; (3) female transmission; (4) sex limitation.

In all these respects muscular dystrophy is closely analogous to such conditions as Ichthyosis, Hæmophilia, Retinitis pigmentosa, Brachydactyly, &c. Now, in none of these "hereditary" diseases has the *vera causa* been determined. It is only, therefore, with the elucidation of the intricate and delicate mechanism of heredity that the

true ætiology of muscular dystrophy can be discovered, and, as a result, the evolution of a treatment which, if one may prophesy, will be within the sphere of Preventive rather than Curative Medicine

I am indebted to Mr. Victor Lewis, who kindly took the photographs of these cases.

INTESTINAL HÆMORRHAGE TREATED BY EMETINE.

Dr. Victor Gardon (*La Quinzaine Thérapeutique*, 10th of March, 1914) writes that recently L. Renon had occasion to treat two patients who suffered from hæmorrhage of the alimentary tract; the bleeding was severe and consisted of hæmatemesis and melæna; one patient suffered from atrophic cirrhosis of the liver, and the other from hypertrophic cirrhosis of the same viscus. Hydrochloride of emetine in six centigramme doses and in subcutaneous doses quickly arrested the bleedings which were very copious. In a case of intestinal hæmorrhage due to intestinal tuberculosis Dr. Gardon employed the salt, and although the bleeding had continued for two weeks, one dose arrested the loss a few hours after injection. He employs a solution containing four centigrammes of the hydrochloride to a cubic centimetre of distilled water. The injection is given under the skin of the femur, on the external surface of the thigh; it produces no unpleasant effect, and its absorption is rapid. The effect is almost immediate, in twenty-four hours the hæmorrhage ceased. We may also add that the hypodermic is painless and is readily tolerated. In no single instance did we find any intolerance of the medication. We may further say that in two cases the loss of blood was arrested in one day, when neither ergotine, chloride of calcium, adrenaline, nor an ice bag on the abdomen had any effect on the hæmorrhage. Dr. Gardon thinks that emetine might be used with advantage to control or stay the bleeding in typhoid cases, but he acknowledges that his confrère M. Charles Flanchin, who injected eight centigrammes in a case of typhoid (*Gazette Médicale de Paris*, 26th of November, 1913) which had an abundant intestinal hæmorrhage, had no good results.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Astrology in Medicine. The FitzPatrick Lectures, delivered before the Royal College of Physicians on November 5 and 11, 1913, with an Addendum on Saints and Signs. By Charles Arthur Mercier, M.D., Fellow of the College. London: Macmillan & Co., Ltd. 1914. 8vo. Pp. 100.

The FitzPatrick Lectures, though not an old foundation, have already taught us to look forward with pleasure to an annual volume which will not only instruct us in the history of our craft, but amuse us with the quaint doings of its votaries. In both of these ways Dr. Mercier has fulfilled the obligations put on him by his predecessors, and though he poses as laying chief stress on the whimsicalities of his subject his book contains much solid instruction.

There is perhaps no more curious phase in the history of Medicine than the position once accorded to astrology. Men of the very highest intellects and possessors of the greatest scientific knowledge of their time, had implicit belief in the direct influence for good and evil of the heavenly bodies on the lives and fortunes of the inhabitants of this earth. This belief, too, was no mere academic tenet fostered by tradition and custom, but was a living moving force in the guidance of their conduct and actions. Yet this belief, after an existence of some six thousand years, has become as dead and inert as the proverbial door nail. Love of mysticism has always been one of the most powerful forces dominating human endeavour, but once the people believe that they have torn the heart out of a mystery its influence on their conduct rapidly declines. Astronomy by the discovery of the laws in accordance with which the heavenly bodies move appeared to solve their mystery, even though it leaves

those movements as wonderful as before, and with this solution it gave the death-blow to astrology. Astrology is dead, but other faiths have taken its place, perhaps not a whit more credible. It may perhaps be asked why the study of astrology should be undertaken in a course of lectures devoted to the History of Medicine. The answer to such a question will be plain enough to anyone who reads the works on medicine written before the seventeenth century. Even where medical writers did not openly profess their belief in astrology one can see the influence of such belief in their work, and to understand that work correctly one must know something of the meaning of the belief.

Of the general tenets of astrology Dr. Mercier gives an admirable general outline, but we could have wished that he had treated the subject a little more seriously. One has the feeling that all the time he is laughing at the follies of the astrologers rather than seriously trying to explain their point of view. The absence of all specific references to the writings of the astrologers detracts considerably from the value of the book as a contribution to the history of Medicine. It seems, however, that Dr. Mercier desired to give a popular exposition of his subject, and if that was his wish we must congratulate him on the success with which he has accomplished his desire.

An Introduction to the History of Medicine, with Medical Chronology, Bibliographic Data and Test Questions. By Fielding H. Garrison, M.D. Illustrated. Philadelphia and London : W. B. Saunders Company. 1914. 8vo. Pp. 763.

In recent years we have seen a very considerable awakening in the interest taken in the study of medical history. The subject is no longer looked upon as the harmless hobby of a few enthusiasts, but it is beginning even to claim a place in the curriculum of some of our medical schools. The capacity of the modern student of Medicine is strained almost to breaking point by the weight of subjects crowded

into his curriculum, and a diminution rather than an increase of them appears to be essential in the near future. Under these circumstances it is interesting to note that medical history bases its claim to a place on the desire of the student rather than on the autocratic will of a governing body of medical education. The success which attended the meetings of the Section of Medical History at the International Medical Congress held in London last year shows how widespread among the profession is the desire to know something of the history of their craft. It is interesting to note that it was at the London meeting of the Congress that such a section was first established. for English workers have been rather behind their brethren of Europe and America in the study of medical history in recent years. There has been no lack of British workers in isolated districts of the great field of medical history, but for a comprehensive view of the whole field one has been obliged to go abroad for information. Only the first volume of Dr. Playfair's translation of Neuburger's great work has yet been issued, and English-speaking students were hampered for the want of a concise book of reference in their own language.

Dr. Garrison, Editor of the Index Medicus and principal Assistant Librarian in the Surgeon-General's Library, Washington, has had splendid opportunities of becoming familiar with the history of Medicine, and right well has he made use of them. The book before us is a monument to his industry, and is marked by that careful accuracy which one has learned to associate with all work done by the officers of the Surgeon-General's Library. Dr. Garrison traces the development of medicine from the earliest period to our own time in the different countries of the world, giving an admirable and concise summary of all the leading events. But he has not rested content with a mere summary of events, for he has given us the names and dates of those workers who have been associated with the events recorded. There is hardly a subject or a method in medicine which is not referred to, and in connection with which we cannot find mention of the

originator or of those who have principally developed it. The more one studies the book the more one is astonished with the quantity of accurate information it contains. That some things must be omitted in such a work is inevitable, but we confess to some disappointment to find no reference to the work of Mosse, the founder of the Dublin Lying-in Hospital, the first maternity hospital established in Great Britain or Ireland. It may seem a small matter, but the pioneer work of Mosse merits the fullest recognition. The foundation of the Irish Colleges of Physicians and Surgeons and the establishment of the School of Physic in Trinity College might also have found places in the Medical Chronology. These, however, are small blemishes in such an admirable work, and will not we believe in any way detract from its value in the eyes of Irish Students.

X-Rays: an Introduction to the Study of Röntgen Rays. By G. W. C. Kaye, B.A., D.Sc., Head of the Radium Department of the National Physical Laboratory; Examiner in Medical Physics for the Universities of London and Glasgow; Member of Council of the Röntgen Society. London, New York, Bombay, Calcutta, and Madras: Longmans, Green & Co. 1914. Demy 8vo. Pp. xx + 252.

The preface states that this little book aims at giving an account of such of the present-day methods and apparatus as appear valuable or novel, and of conveying a notion of the historical trend of events from Prof. Röntgen's discovery in 1895 down to the end of the year 1913.

The author trusts it may be acceptable not only to the student of physics, but to the man of general scientific interests, and particularly to the members of the medical profession.

We have no hesitation in vouching its acceptability. For ourselves, we have been amply repaid by reading it. A small book of 250 pages, it contains interest and information seldom to be found in volumes thrice its size.

The book is written from the physicist's standpoint, and, so far as we know, is entirely different to any heretofore published. It can scarcely be called a beginner's book, nor will it appeal to those who merely wish to learn how to manipulate x-ray apparatus, but all who desire to learn what physicists have to teach us about the Röntgen rays, and the many theoretical and practical problems connected with them, will find the book satisfying, and, as far as the subjects permit, simple.

The opening chapters deal with the phenomena of a discharge tube, the cathode and positive rays, and the discovery and production of x-rays. High potential generations receive attention, and this chapter contains much that is important from the view of the practical manufacturer. The same remark applies also to the matter dealing with the x-ray bulb, its terminals, its hardness, and its blackening. As regards the x-rays themselves, their nature, measurement, reflection, and practical application are ably dealt with, and a chapter is devoted to the secondary rays—characteristic and scattered—to which they give origin.

In the appendix we find an account of the Coolidge tube, showing the book to be thoroughly up-to-date, and several tables, which, with those in the text, make the volume most useful as a book of reference.

There is a slight printer's error on p. 8, Johnstone Stoney's name appearing as Storey. It is given correctly in the index.

We feel that Dr. Kaye has done a real service in writing this book, which we heartily commend to all interested in the physics of Röntgen radiation.

Transactions of the Thirty-fifth Annual Meeting of the American Laryngological Association, held at Washington, D.C., May 5th, 6th and 7th, 1913. New York : Published by the Society. 1913. Demy 8vo. Pp. iii + 323.

One of the most important communications in this volume is on " Atrophic Rhinitis in its Historical, Etiological and

Histological Aspects," by Jonathan Wright, M.D. This paper is so condensed and full of information that no review of it can even indicate its contents. The author's subject is divided under the headings of history, ætiology and pathology. He traces the disease back to the earliest times, and gives all the various theories right down to the present time. The monograph includes a very complete bibliography.

In the section under the heading of pathology the author winds up his remarks as follows :—" The structural changes wrought in the mucosa are evidenced in the vitiation of the secretions. The absorption of bone and cartilage is responsible for a change in the external configuration of the nose when the disease has begun in early childhood, before the facial bones are fully developed. Whether it has begun in childhood or at puberty the roominess of the nasal chambers is dependent upon atrophy of the scroll bones and of the mucosa covering them.

" How to account for the disappearance of the crusts and the secretions in those cases in which it occurs after middle life remains a subject for histological research. A restoration of the glands and blood vessels anatomically seems biologically improbable, yet there is a return to a secretion on the surface of such a nature that its evaporation is not rapid enough to prevent it from carrying away with it those non-volatile ingredients which formerly were left behind as crusts of dried secretion.

" The atrophy of age is of the same structural nature, so far as the glands and blood vessels and the periosteum are concerned, and it seems probable that in those cases which recover from their terrible affliction of foul-smelling nasal crusts, the senile stage of the mucosa is reached and its condition suffices to remove the trouble. In this view, then, we may believe that a fibrosis of unknown origin in the periosteum and perichondrium induces, by shutting off the proper nutrition of the tissues, a state of vicious lipoid-proteid metabolism in the mucosa, the waste products of which washed out with the serum and lymph of the tissues produce the crusts on the surface. These vary

with the concentration of the solid constituents of the secretions. Sometimes they are not sufficiently concentrated to remain as a deposit on the surface. We may thus account for cases of atrophy without crusts or excessive odour. The approach of age slows down the activity of all metabolic processes and tends thus automatically to cure the ozœna of atrophic rhinitis and leave behind only the structural atrophy. I am fully aware at the present stage of our knowledge how likely this hypothesis is to prove insufficient on critical analysis or even erroneous when more complete objective knowledge is attained.

"To summarize the histological pathology of atrophic rhinitis, we may say that owing either to antecedent intranasal inflammation or to a constitutional dyscrasia, or to the physiological change of age, or to all three, thickening of the fibrous elements in the periosteum or perichondruim is followed by consequences which are manifested through the effects of local malnutrition due to interference with the blood and perhaps the lymph supply of the mucous membrane and the bone it covers. These are :—

"1. The metaplasia and cornification of the surface epithelium.

"2. Round cell infiltration.

"3. Destruction of the blood vessels.

"4. Destruction of the glands.

"5. Destruction of the elastic fibres.

"6. Absorption of the bone, especially of the inferior turbinate.

"7. Destruction of the smooth muscle fibres in the stroma.

"8. These structures, to some extent, replaced by round cell infiltration and by lowly organized fibrous connective tissue sometimes approaching the embryonic type.

"9. While these changes are going on there is excretion or transudation to the surface of lipo-proteids, derived from tissue waste and perverted gland function, which form a stinking, viscid secretion and crusts in which bacteria plentifully multiply.

"10. Finally, this destructive metabolism ceases with

the advent of old age. The foul secretions and crusts disappear and the surface is moistened by a serous exudate which dilutes the remaining gland secretion sufficiently to secure its drainage. Thus nature brings about a cure difficult or impossible for man to accomplish."

We then pass to a series of papers on tonsillar operations and a consideration of infection passing through the tonsils to general systemic involvement. This by a natural transition leads to the phlegmons of the upper air passages, including the infection of an erysipelatous nature. All these papers are highly interesting, but individually short, and, as the authors record appearances and cases and do not draw general conclusions, it is not possible to indicate shortly their diverse contents.

Dr. Max Goldstein records a rare case of purpura hæmorrhagica, which was entirely localised to the nasal and oral cavities, and gives an excellent coloured drawing of the condition as seen in the mouth.

Tropical Diseases: A Manual of the Diseases of Warm Climates. By Sir Patrick Manson, G.C.M.G., M.D., LL.D. (Aberd.); F.R.C.P. London; F.R.S.; Hon. D.Sc. Oxon.; &c. With 12 colour and 4 black-and-white Plates and 239 Figures in the text. Fifth Edition, revised throughout and enlarged. London, New York, Toronto and Melbourne: Cassell & Co., Ltd. 1914. Cr. 8vo. Pp. xxiv + 937.

In a certain sense Manson's "Tropical Diseases" needs no bibliographical notice at a reviewer's hands. Recognised in all parts of the British Empire and in the United States of America as a standard text-book, it has won and maintained an impregnable position in medical literature. First published in May, 1898, it has reached its fifth edition in sixteen years, and that too notwithstanding ten reprints of the previous four editions.

But, as the author points out in his Preface, Tropical Medicine has continued to advance in a remarkable manner since the publication of the fourth edition in 1907,

and a general revision of the text had become absolutely necessary if the manual was to continue to be of service to the student of tropical diseases. Sir Patrick Manson proceeds to mention some of the more recent advances in tropical pathology, to which adequate justice is done in this new edition.

Nor have the prevention and treatment of tropical disease been neglected. To take one example, a full account is given of beri-beri (pages 417 to 441, inclusive). The ætiology, nature, and treatment of the affection are now thoroughly well known, thanks to the work of Eijkman, Braddon, Fraser and Stanton. These observers have shown that the beri-beri of the Eastern Peninsula, of the Eastern Archipelago, of the Philippines, of China and Japan is a consequence of a diet into which over-milled rice enters as the principal element, that is rice from which the entire pericarp has been removed ; and that in this pericarp there is a substance essential for the proper nutrition of the nervous system. Braddon held that rice (*paddi*) is liable in certain localities to be attacked by a germ which in its multiplication produces a toxin, and that this toxin, which is not destroyed by cooking, is the cause of beri-beri. The germ is destroyed by the boiling to which "cured rice"—that is, rice, which when garnered and before husking, is boiled and dried—is subjected before husking.

These views appear sound, notwithstanding a contrary opinion expressed by Dr. Howard D. King, of New Orleans, in an article published in the number of this Journal for July (page 37).

Among other new points which are included and discussed in this edition are the treatment of yaws and relapsing fever by salvarsan—that deadly foe of the spirochæte tribe ; the treatment of trypanosomiasis by antimony, based on the researches of Plimmer and Thompson in rat-infection by *Trypanosoma lewisi ;* and the substitution of emetine for crude ipecacuanha in the diagnosis and treatment of amœbic dysentery and amœbic abscess of the liver, an advance which Sir Patrick Manson tells us

we owe to Leonard Rogers, whose well-merited birthday honour of knighthood was gazetted on June 22nd.

Enough has been stated to show how well abreast of modern progress in scientific Medicine Sir Patrick Manson has kept his classical work. We have no hesitation in expressing the opinion that the volume is essential to every physician at home or abroad, seeing that the phrase "Tropical Diseases" must be used in a relative rather than an absolute sense.

The Prevention of Dental Caries and Oral Sepsis. By H. P. Pickerill, M.D., Ch.B., M.D.S. (Birm.), L.D.S. (Eng.); Professor of Dentistry and Director of the Dental School in the University of Otago. Second Edition. London: Baillière, Tindall & Cox. 1914. Demy 8vo. Pp. xvi + 374.

We have so recently noticed the first edition of this work that we scarcely think that anything is to be gained by traversing the ground again. The second edition confirms the opinion we then expressed—viz., that it was an excellent work, showing considerable originality in dealing with this important subject, important in view of the far-reaching effects of dental caries.

That the first edition should have been exhausted in less than two years tells its own tale, and argues well for the popularity of Professor Pickerill's book. The second edition exceeds the first by 68 pages, and this new material is the portion which chiefly claims our attention.

The quest of the conditions which underlie immunity to dental caries is evidently the task which the author has set out to achieve, and while we are doubtful that he has entirely accomplished it, we have no hesitation in saying that he has done yeoman service in clearing the ground by patient investigation for further research.

In what the author tells us is the new portion of the book, chapter III. deals with the pathology of dental caries. Here Prof. Pickerill reviews briefly the various theories which from time to time have held the field,

winding up with Miller's chemico-parasitic theory, which also forms the basis of the author's own investigations.

In this chapter he says :—" It is, however, necessary to state, since the fact does not appear to have been sufficiently considered in the past, that in the production of caries in the mouth we are not dealing with organisms and carbohydrate media only, for these are always admixed with a variable quantity of saliva of differing composition, and *this third factor is capable of considerably modifying the resulting action.*" In our opinion this is one of the most important statements in the whole work ; the difference in the composition of the saliva is surely the key to this most difficult problem, and is the direction in which its solution must be sought for in the future. Here are also appended the results of the investigation of the flora of the mouths of immune Maori children. These investigations were not an entire success, as they had to be conducted at a considerable distance from a laboratory, the specimens obtained suffering in transmission. However, the conclusions arrived at agree with Miller's statement that there is no material difference in the mouth flora of immune and susceptible individuals.

Chapter IV., on the anatomy and physiology of mastication, contains some interesting observations and diagrams of the actions of muscles whose true function is often very imperfectly understood—viz., the masseters, pterygoids and mylohyoids—and also points out that modern mastication and the diminished use of speech tend to produce narrow jaws and crowded teeth. We venture to differ from the author, and think his conclusions and generalisations are scarcely warranted by his facts. Crowding of the teeth does not invariably result in caries, even in susceptibles, and narrowing of the jaws takes place long before mastication and the action of the swallowing muscles could produce the result he has depicted.

Chapter XIII. deals with the thyroid insufficiency and dental caries. Although the experiments detailed are too meagre to afford any definite conclusions, still they are of great interest, especially if taken in connection with the

recent observations on the pituitary body which have been reported by Goetsch, Cushing, and Jacobson, as research in this direction may shed an important and unexpected light on the pathology of dental caries.

Chapter XVII. treats of alimentary secretions. It is excellent, and the subject undoubtedly demands more attention than it has hitherto received. Prof. Pickerill here tells us that acids and alkalies respectively stimulate and depress the secretions of the salivary, gastric, pancreatic and biliary organs, and gives experimental proof to show that those substances which have been found beneficial in the mouth are also good for the other three. He illustrates what he calls his "heterodox suggestions" by a diagram of an alimentary vicious circle which is ingenious and very convincing, and concludes that "the chief indications being obviously the more liberal use of organic acids in such strength that they produce a normal and maximum response, and neither fail to stimulate on account of weakness nor paralyse nerve endings by being too strong." This, being translated, means fruit at the conclusion of all meals, a suggestion which the author makes elsewhere in his book, and which we thoroughly endorse.

The present edition is well printed with good clear type, and contains some excellent illustrations which possess the merit of originality. We can confidently recommend this work to all students and practitioners who wish to know the last word on a subject that is just at present claiming a considerable amount of public attention.

Extraction of Teeth. By F. Coleman, L.R.C.P., M.R.C.S., L.D.S. Second Edition. London: H. K. Lewis. 1914. Crown 8vo. Pp. xi + 174.

There is a great deal of useful information in this book, but the author has not acquired a ready method of presenting it, and much of the subject-matter is obscured under a mass of words.

Paragraphs might be deleted, such as: "Mandibular

molar roots ; roots of mandibular molars may be found detached or united to their crowns like maxillary molars," page 38. Some sentences might be abbreviated ; for example : " Roots of mandibular incisors and canines may be advantageously operated upon with forceps similar to those used when their crowns are intact, but for preference provided with slighter and sharper pointed blades (Fig. 28)." This might be abbreviated to " A forceps with lighter and more pointed blades (Fig. 28) is best for the roots of these teeth."

There is also much valuable information which ought to be included, but is not, and there are various statements in the book which ought not to be there.

Mr. Coleman uses words which do not exactly bear the meaning he attaches to them, and this does not add to the dignity of his work : " *Nozzle* " and " *hilt* " of a forceps ; roots " *agglutinated* " for joined together ; third molar " *fused* " to second molar ; " *disinterred* " for " extracted ; " " *reinstated* " for replaced. Birds have " *beaks*," forceps have " blades," always.

Cutting instruments are exempted from boiling, which is a mediæval practice. Lacquered forceps are recommended as " they do not slip." It is much easier to clean nickel-plated forceps and to see if they are clean ; the serrations prevent them from slipping, and if the author keeps them as sharp as he recommends, he will not be much troubled with plating on the points of the blades.

The joint of the forceps illustrated (Figs. 21, 23, 24) appears to be the one condemned on page 10.

There is no mention of the uses and advantages of straight handle forceps, and bayonet-shaped forceps have merits which have also been passed over.

Does Mr. Coleman really think that " most mandibular third molars that are removed with an elevator can be as easily extracted with a forceps " ?

We think that the various forms of forceps which have been disinterred from Roman and other ancient cities deprive Sir John Tomes of the credit claimed for him.

The only gum scissors illustrated is a very good small plate shears; we have never succeeded in cutting gum with it. We would rather not experiment with the second makeshift extracting chair—*i.e.*, a chair behind a chair, &c., and the operator standing on one leg. So many things might happen. To use a vulgar expression "the stance is bad." We do not know anything more reliable than a wall in a case like this.

Most people extract a deciduous tooth retained after the eruption of its successor as it disorganises the bite and predisposes to caries, contrary to the author's instructions.

Once Mr. Coleman gets away from the "extraction of teeth" his book becomes quite readable. We think it wants to be pulled to pieces, rewritten and rearranged giving all the methods and instruments; or the title might be altered.

Genito-Urinary Diseases and Syphilis. By Edgar G. Ballenger, M.D., Adjunct Clinical Professor of Genito-Urinary Diseases, Atlanta Medical College; Editor Journal—Record of Medicine; Urologist to Wesley Memorial Hospital; Genito-Urinary Surgeon to Davis-Fisher Sanatorium; Urologist to Hospital for Nervous Diseases, &c., Atlanta, Georgia. Assisted by Omar F. Elder, M.D. Second Edition. Revised, with 109 Illustrations. London: Butterworth & Co.; Sydney: Butterworth & Co. (Australia), Ltd.: Calcutta: Butterworth & Co. (India), Ltd.; Atlanta, Ga.: E. W. Allen & Co. 1914. All rights reserved. Royal 8vo. Pp. 529 + xxiv.

Genito-urinary Diseases and Syphilis, by Edgar G. Ballenger, M.D., assisted by Omar F. Elder, M.D., is the title of a work (second edition), which, though primarily written for the general practitioner, will prove to be a decided acquisition to the literature of the subject of which it treats. The authors have purposely written briefly those sections which deal with the rare affections,

and unusual operations, in order to lay especial emphasis upon the commoner diseases. Much space has been devoted to the treatment of gonorrhœa, prostatic disorders, the diagnosis of renal affections, and the diagnosis and treatment of syphilis, special mention being made of the indications, contraindications and technic of the administration of salvarsan and neo-salvarsan. Dr. J. Edgar Paullin contributes a full description of the technic and interpretation of the Wassermann and luetin tests.

Our American cousins refer to potent individuals as being "live men," we may plagiarise their expression and say the book under consideration is a "live book." Its authors' efforts quicken our imagination and stimulate our interest. We feel as it were partakers in their labours and follow each detail in their studies with resulting assimilation of their views and their equivalent advantages. We account for this desirable state of being *en rapport* with the authors by reason of the fact that their work has been painstaking, practical and derived from abundant personal experience. Whilst the book is orthodox it is not a compilation of stereotyped views of foreign writers, but mainly an expression of its author's own observations—hence the explanation of its value and attractiveness.

Of many interesting features the volume possesses we may select the following:—The authors' abortive treatment of gonorrhœa, which in favourable cases effects 90 per cent. of cures in five days, and occasionally in one. The autoserotherapy of hydrocele, which consists of withdrawing the fluid and immeditaely injecting from 6–8 cc. into the gluteal muscles. The authors claim the distinction of being the first to introduce this treatment. The means of preparing suet and paraffin in capsules as a medium for administering drugs, the solution of which in the stomach it is desirable to prohibit, thus preventing gastric disturbance. The capsules may be hardened by immersion in a solution of formalin (40 per cent. formaldehyde) for one minute's duration. The authors' device for administering intravenous injections—a device which has enabled them to give

1,650 "consecutive" injections without making a single incision through the skin. A fifty cc. syringe invented by the authors for intravenous injections of salvarsan and neo-salvarsan.

The authors make no reference to such anomalies as movable testicle, torsion of the testicle, torsion of the spermatic cord. We think that these conditions are not sufficiently recognised. They are associated with much unhappiness and are amenable to cure. No doubt the inherent delicacy which renders us reluctant to examine the normal external genitals of our patients makes us unfamiliar with the natural morphological and anatomical states and relations of these organs, and thereby incompetent to appreciate many abnormalities which consequently exist unrecognised.

Of the medicinal remedies mentioned by the authors for use in cases of cystitis, &c., urotropine is one. We incline to the belief that hexamethylaminetetramine and most of its derivatives require an acid medium in order to exercise their disinfecting effects. This is a point which we think is not generally recognised by practitioners, and for this reason should be emphasised. The book contains a few printer's errors, which, however, do not obscure the meaning of the text.

In conclusion, we cordially recommend the volume, and are confident it will be favourably regarded by all who read it.

PUNCTURE OF AN INTERVERTEBRAL DISC.

M. Pierre Merle (d'Amiens) reports that whilst puncturing the spinal column of a child six years old, who was suffering from acute ataxia, the needle penetrated an intervertebral disc. When the instrument was withdrawn a mass of soft white gelatinous matter was found on its point, which proved to be of intervertebral substance. During the entrance of the needle the operator felt no sense of resistance whatever.—*Gazette des Hôpitaux*, 87 an., No. 24.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Walter G. Smith, M.D., F.R.C.P.I.
General Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF MEDICINE.

President—J. F. O'Carroll, M.D., F.R.C.P.I.
Sectional Secretary—F. C. Purser, M.D., F.R.C.P.I.

Friday, March 27, 1914.

The President in the Chair.

Exhibit.—Syphilitic Meningitis.

Dr. Boxwell showed a young man, aged twenty years, who had contracted syphilis last August. For this he consulted Dr. Stokes in December, and was given a dose of salvarsan and a short course of mercury. He then went from under observation. On the 16th of February last he was brought to hospital again after having an attack of vertigo in the street. It was then noticed that he had nystagmus and a certain amount of deafness in the left ear. The vertigo was very extreme, and when put standing on the floor he reeled like a drunken man. After a short course of treatment he recovered his balance, but was still very ataxic. He then developed headache behind the ear and at the back of the head, and was also troubled with vomiting. Facial paralysis (lower neurone type) developed suddenly. Examination of the blood gave a plus 3 positive Wassermann, and the cerebrospinal fluid showed 240 white cells per cm., which was a very high count. The patient was given a second dose of salvarsan (.3 gm.), and since then all his symptoms, except the deafness, were clearing up.

Exhibit.—Myelitis.

Dr. Boxwell showed a boy, aged five and a half years. He was first seen last June. The history was that in the previous February he had trouble with micturition, which was thought to be due to a long and tight prepuce, and he was sent to hospital for circumcision. While in hospital he developed whooping cough, and during the course of this disease paralysis of the legs set in. When seen in June last he had no knee jerks and no plantar reflex. Difficulty was found in arriving at a satisfactory conclusion as to how far his sensation was affected, but it was considered that if he had anæsthesia at the commencement it must have passed off quickly. Until October he did not show any signs of recovering power, but within the last two months his knee jerks had become exaggerated. It was demonstrated that at present his knee jerks were pretty active, but there was no plantar reflex. It was obvious that the case was not one of acute anterior poliomyelitis, and it was suggested that it was myelitis, although this condition was uncommon in a child of the age. The child exhibited a peculiar gait, and could walk much better backward than forward. He had most troublesome incontinence, the urine coming away intermittently in jets.

The cases were discussed by The President and Drs. Purser and Nesbitt.

Carbolic Acid Poisoning, with Experiments.

The President of the Academy (Dr. Walter G. Smith) read a paper on this subject. [It will be found in the May number of this Journal, Vol. 137, No. 509, page 321.]

The President complimented Dr. Smith on his interesting paper, and said most of the Senior Fellows present had seen black urine during their student days in people who had been plentifully treated with carbolic acid. He had seen it following treatment with pyrogallic ointment.

Dr. Travers Smith inquired what would be considered a safe intravenous dose of phenol. He remembered some cases of tetanus that had been treated by the President by intravenous injection of phenol, and he was anxious to know in bad cases where the treatment might require to be pressed to what point it might be safely done.

In connection with Dr. Travers Smith's remarks the

President said he did not think the dose was given intravenously, and as well as he remembered the strength of the solution was 1 in 200 c.c. given twice daily into the tissues.

Dr. Kirkpatrick said he would like to know if, as long as the ordinary sulphates were present in the urine, the patient was unlikely to suffer from carbolic acid poisoning. He also inquired as to the utility of alcohol in these cases of carbolic acid poisoning.

Dr. Boxwell also spoke of the utility of alcohol in cases of carbolic acid poisoning, and said he had experience of a number of cases treated in this way at the Meath Hospital.

Dr. Nesbitt corroborated Dr. Travers Smith's testimony as to the utility of phenol in cases of tetanus administered subcutaneously.

The President (Dr. W. G. Smith), replying, said he was much interested in the subject of carbolic acid being given in large doses, and pointed out that it would be impossible to inject anything in the way of strong carbolic acid into the veins without injury. Referring to Dr. Kirkpatrick's remarks regarding sulphates, he said if the case was a slight one, and it was found that the urine gave no reaction with chloride of barium it showed that the sulphate was locked up by the carbolic acid. It would do a patient no harm to give an extra dose of sulphate of sodium. He agreed that alcohol was a valuable remedy, and thought that the best thing to do would be to wash out the stomach with alcohol

Incontinence of Urine in Nervous Diseases.

Dr. Boxwell read a paper on this subject. [It will be found in the May number of this Journal, No. 509, page 340.]

For the anatomical observations in support of this view Dr. Boxwell was indebted to Professor A. F. Dixon.

The paper was discussed by The President, The President of the Academy, and Drs. Purser and Travers Smith.

LITERARY NOTE.—RARE MEDICAL BOOKS.

We have received from Messrs. Funk & Wagnalls Company, of Salisbury Square, London, E.C., an illustrated catalogue containing many interesting items. This firm offers to send a copy gratis to any of our readers who make application for it.

SANITARY AND METEOROLOGICAL NOTES.

Vital Statistics.

For Four weeks ending Saturday, June 13, 1914.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ended June 13, 1914, in the Dublin Registration Area and the twenty-six principal provincial Urban Districts of Ireland was 17.9 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,205,280. The deaths registered in each of the four weeks of the period ending on Saturday, June 13, and during the whole of that period in certain of the districts, alphabetically arranged, correspond to the following annual rates per 1,000 :—

County Boroughs, &c.	Week ending				Average Rate for 4 weeks
	May 23	May 30	June 6	June 13	
27 Town Districts	**18.9**	**17.8**	**16.7**	**17.9**	**17.8**
Dublin Reg. Area ...	19.3	22.0	19.9	18.5	19.9
Dublin City	21.3	21.8	22.5	19.8	21.3
Belfast	17.9	15.0	16.6	16.9	16.6
Cork	19.7	18.4	15.0	21.1	18.5
Londonderry	16.5	7.6	14.0	10.1	12.1
Limerick	24.4	17.6	17.6	23.0	20.6
Waterford	19.0	17.1	19.0	13.3	17.1

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 27 districts during the week ended Saturday, June 13, 1914, were equal to an annual rate of 1.8 per 1,000. Among the 129 deaths from all causes in Belfast were 4 from measles, 2 from scarlet fever, 7 from whooping-cough, and 6 from diarrhœal diseases. Included in the 31 deaths from all causes in Cork were 1 from whooping-cough and 1 (that of child under 2 years of age) from diarrhœa and enteritis. One of the 17 deaths from all causes in Limerick was from scarlet fever. Of the 5 deaths in Sligo, 3 were from measles; and of the 2 deaths recorded for Lurgan, 1 was from measles and 1 from scarlet fever.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin, as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 406,000, that of the city being 310,467, Rathmines 39,155, Pembroke 30,240, Blackrock 9,197, and Kingstown 16,941.

In the Dublin Registration Area the births registered during the week ended June 13 amounted to 271—130 boys and 141 girls, and the deaths to 163—92 males and 71 females.

DEATHS.

The deaths registered, omitting the deaths (numbering 19) of persons admitted into public institutions from localities outside the Area, represent an annual rate of mortality of 18.5 per 1,000 of the population. During the twenty-four weeks ending with Saturday, June 13, the death-rate averaged 23.5, the mean rate for the corresponding portions of the ten years, 1904–1913, being also 23.5. The total deaths registered, numbering 163, represent an annual rate of 20.9 per 1,000. The annual rate for the past twenty-four weeks was 25.0 per 1,000, and the average annual rate for the corresponding period of the past ten years was 24.7 per 1,000 of the mean population for all deaths registered.

The deaths (163) included 1 from paratyphoid fever, 1 from diphtheria, 1 from dysentery, 8 from measles and 4 from diarrhœa and enteritis in children under 2 years. In each of

State of Infectious Disease in the Dublin Registration Area, and in Belfast, Cork, Londonderry, Limerick, and Waterford.

The following Table shows the Number of Cases of Infectious Diseases notified, under the "Infectious Diseases (Notification) Act, 1889," and the "Tuberculosis Prevention (Ireland) Act, 1908," in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the Cities of Belfast, Cork, Londonderry, Limerick, and Waterford, during the week ended June 13, 1914, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

Cities and Urban Districts	Week ending	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Pyrexia (origin uncertain) *a*	Enteric or Typhoid Fever	Erysipelas	Puerperal Fever	Whooping-cough	Cerebro-spinal Fever	Acute Polio-myelitis	Pulmonary Tuberculosis	Total
City of Dublin	May 23	*	*	9	–	–	8	–	1	6	2	–	*	–	–	26	52
	May 30	*	*	15	–	–	11	–	1	4	4	–	*	–	–	33	68
	June 6	*	*	13	–	–	6	–	–	4	5	–	*	–	–	32	60
	June 13	*	*	8	–	–	8	–	–	–	2	–	*	–	–	13	31
Rathmines and Rathgar Urban District	May 23	*	*	3	–	–	2	–	–	–	1	–	*	*	*	*	6
	May 30	*	*	2	–	–	1	–	–	–	–	–	*	*	*	*	3
	June 6	*	*	2	–	–	1	–	–	–	–	–	*	*	*	*	3
	June 13	*	*	2	–	–	–	–	–	–	–	–	*	*	*	*	2
Pembroke Urban District	May 23	3	–	7	–	–	–	–	–	2	–	–	–	*	*	–	12
	May 30	2	–	–	–	–	–	–	–	–	–	–	–	*	*	2	4
	June 6	1	–	1	–	–	–	–	–	–	–	–	–	*	*	1	3
	June 13	3	–	1	–	–	–	–	–	1	–	–	–	*	*	1	6
Blackrock Urban District	May 23	*	*	2	–	–	–	–	–	–	–	–	*	–	*	*	2
	May 30	*	*	–	–	–	–	–	–	–	–	–	*	–	*	*	–
	June 6	*	*	–	–	–	–	–	–	–	–	–	*	–	*	*	–
	June 13	*	*	2	–	–	1	–	–	1	–	–	*	–	*	*	4
Kingstown Urban District	May 23	*	*	–	–	–	–	–	–	–	–	–	*	*	*	–	–
	May 30	*	*	–	–	–	–	–	–	1	–	–	*	*	*	–	1
	June 6	*	*	–	–	–	1	–	–	–	–	–	*	*	*	–	1
	June 13	*	*	1	–	–	1	–	–	1	1	–	*	*	*	3	7
City of Belfast	May 23	*	*	42	9	–	1	–	1	3	3	–	*	–	–	9	68
	May 30	*	*	54	1	–	–	–	–	1	2	–	*	–	–	2	60
	June 6	*	○	46	1	–	8	1	1	2	2	–	*	–	–	3	64
	June 13	*	*	33	5	–	3	–	–	4	5	1	*	1	–	–	52
City of Cork	May 23	7	*	2	–	–	–	–	1	2	3	–	*	*	*	*	15
	May 30	7	*	–	–	–	1	–	–	1	–	–	*	*	*	*	9
	June 6	8	*	1	–	–	1	–	–	3	1	–	*	*	*	*	14*b*
	June 13	2	*	4	–	–	1	1	1	1	–	–	*	*	*	*	10
City of Londonderry	May 23	*	*	1	–	–	–	–	–	–	–	–	*	*	*	*	1
	May 30	*	*	–	–	–	–	–	–	–	–	–	*	*	*	*	–
	June 6	*	*	1	–	–	–	–	–	–	–	–	*	*	*	*	1
	June 13	*	*	1	–	–	1	–	–	–	1	–	*	*	*	*	3
City of Limerick	May 23	*	*	2	–	–	–	–	–	–	–	–	*	–	*	*	2
	May 30	*	*	1	–	–	–	–	–	–	–	–	*	–	*	*	1
	June 6	*	*	1	–	–	–	–	–	1	–	–	*	–	*	*	2
	June 13	*	*	1	–	–	–	–	–	1	–	–	*	–	*	*	2
City of Waterford	May 23	*	*	–	–	–	–	–	–	–	–	–	*	*	*	–	–
	May 30	*	*	–	1	–	–	–	–	–	–	–	*	*	*	1	2
	June 6	*	*	–	–	–	–	–	–	–	–	–	*	*	*	2	2
	June 13	*	*	–	–	–	–	–	–	–	–	–	*	*	*	4	4

a Continued Fever

b Not including two cases of whooping-cough.

the three preceding weeks deaths from diphtheria had been 5, 1, and 1 ; from enteric fever in the 3 weeks ending with the 6th inst., 0, 1, and 1 ; from dysentery, 0, 0, and 1 ; from measles, 16, 14, and 18 ; and from diarrhœa and enteritis in children under 2 years, 7, 4, and 2 respectively.

Of 25 deaths from tuberculosis (all forms), 19 were attributed to pulmonary tuberculosis, 2 to tubercular meningitis, and 4 to other forms of the disease. In each of the three preceding weeks, deaths from all forms of tuberculosis had been 27, 28 and 31.

There were 13 deaths from cancer, or malignant disease.

There were 3 deaths of infants from premature birth, 5 deaths from convulsions, 1 death from congenital malformation, and 4 deaths from congenital debility.

The deaths from pneumonia included 4 from bronchopneumonia, 1 from lobar pneumonia, and 7 from pneumonia (type not distinguished).

Nineteen deaths were caused by organic diseases of the heart. There were 10 deaths from bronchitis.

There were 3 accidental deaths, including 1 death caused by drowning.

In 3 instances the cause of death was " uncertified," there having been no medical attendant during the last illness.

Forty-five of the persons whose deaths were registered during the week were under 5 years of age (27 being infants under 1 year old, of whom 11 were under 1 month old), and 35 were aged 65 years and upwards, including 24 persons aged 70 and upwards. Among the last were 12 aged 75 years and upwards.

Cases of Infectious Diseases under Treatment in Dublin Hospitals.

During the week ended June 13, 1914, 6 cases of enteric fever were admitted to hospital, 2 were discharged, and 34 cases remained under treatment in hospital at the close of the week, the respective numbers in hospital at the close of the three preceding weeks having been 27, 26, and 30.

Twenty-one cases of measles were admitted to hospital, 35 cases were discharged, there were 7 deaths, and 77 cases remained under treatment at the close of the week. At the

end of the three preceding weeks such cases had been 116, 113, and 98, respectively.

Eighteen cases of scarlet fever were admitted to hospital, 11 were discharged, and 124 cases remained under treatment at the close of the week. This number is exclusive of 21 patients under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital. At the close of the three preceding weeks the cases in hospital had been 105, 115, and 117, respectively.

Nine cases of diphtheria were admitted to hospital, and 1 case was discharged. The cases in hospital, which at the close of the three preceding weeks had numbered 39, 35, and 35, respectively, were 43 at the close of the week under review.

In addition to the above-named diseases, 7 cases of pneumonia were admitted to hospital, 8 were discharged, there was 1 death, and 19 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, June 13, in 97 large English towns (including London, in which the rate was 12.8) was equal to an average annual death-rate of 13.5 per 1,000 persons living. The average rate for 16 principal towns of Scotland was 14.4 per 1,000, the rate for Glasgow being 15.0, and that for Edinburgh 12.0.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by A Maxwell Williamson, M.D., B.Sc., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended June 13. From this report it appears that of a total of 61 cases notified, 32 were of scarlet fever, 11 of phthisis, 14 of diphtheria and 4 of erysipelas. Among the 524 cases of infectious diseases in hospital at the close of the week were 227 cases of scarlet fever, 199 of phthisis, 60 of diphtheria, 12 of measles, 5 of enteric fever, 1 of whooping-cough, 7 of chicken-pox, and 9 of erysipelas.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N. Long.* 6° 15′ *W., for the Month of June,* 1914.

Mean Height of Barometer, - - -	30.105 inches.
Maximal Height of Barometer (25th, at 11 p.m.),	30.431 ,,
Minimal Height of Barometer (7th, at 9 p.m.),	29.738 ,,
Mean Dry-bulb Temperature, - - -	57.4°.
Mean Wet-bulb Temperature, - - -	53.7°.
Mean Dew-point Temperature, - -	50.5°.
Mean Elastic Force (Tension) of Aqueous Vapour	.372 inch.
Mean Humidity, - - - -	78.1 per cent.
Highest Temperature in Shade (on 30th) -	76.0°.
Lowest Temperature in Shade (on 1st), -	42.8°.
Lowest Temperature on Grass (Radiation) (1st)	40.9°.
Mean Amount of Cloud, - - -	56.9 per cent.
Rainfall (on 9 days), - - - -	.878 inch.
Greatest Daily Rainfall (on 9th), - -	.329 inch.
General Directions of Wind - - -	N.W., N.E.

Remarks.

In Ireland, June, 1914, proved a generally fine, dry month. The first half was distinctly cool, but the last few days were exceptionally warm. An outstanding feature of the month's meteorology was a marked preponderance of winds from polar quarters—that is, from points of the compass between N.W. and N.E. On the east coast of Ireland, also, easterly sea breezes during the daytime were often observed. The general distribution of atmospheric pressure was anticyclonic—a tongue of high barometer stretching from the Azores north-eastwards across the Atlantic to the British Isles, and even to Scandinavia.

At the very beginning of the month however, a V-shaped depression passed eastwards across Scotland, and sharp northerly winds followed in its train, causing the thermometer to fall to points between 33° and 38° at many English and Scottish stations on the early morning of the 3rd. In the second week also a depression passed south-eastwards from the north of Scotland to the Continent, causing strong northerly winds and local thunderstorms in many parts of Great Britain.

The third week (14th–20th) was remarkable for violent thunderstorms with abnormally heavy rain locally, and for an extensive prevalence of fog on the British and Irish coasts. In a disastrous thunderstorm which visited the south of London on the afternoon of Sunday, the 14th, the rainfall was 1.89 inches at Wandsworth Common (where 7 lives were lost by lightning), and 3.7 inches in Richmond Park—the latter measurement within $2\frac{3}{4}$ hours. The last 10 days of the month were chiefly fine and summerlike, and from the 27th the thermometer rose daily to 80° or upwards at several of the London stations, the highest reading of all being 89° on the 30th at Camden Square and in St. James's Park. In Dublin 76° was reached on the 30th, the minimum on that day having been 62°.

In Dublin the arithmetical mean temperature (58.4°) was above the average (57.9°) by 0.5° ; the mean dry-bulb readings at 9 a.m. and 9 p.m. were 57.4°. In the forty-nine years ending with 1914, June was coldest in 1909 (M. T. = 54.8°), 1907 (M. T. = 55.4°), 1882 (M. T. = 55.8°), and 1879 ("the cold year") (M. T. = 55.9°). It was warmest in 1887 (M. T. = 62.3°), 1896 (M. T. = 61.4°), and 1899 (M. T. = 61.3°). June 1909, established a record for coldness. In 1913 the M.T. was 57.1°.

The mean height of the barometer was 30.105 inches, or 0.188 inch above the corrected average value for June—namely, 29.917 inches. The mercury rose to 30,431 inches at 11 p.m. of the 25th, and fell to 29.738 inches at 9 p.m. of the 7th. The observed range of atmospheric pressure was, therefore, .693 inch.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 57.4°, or 5.9° above the corresponding M. T. for May, 1914. Using the formula, $Mean\ Temp. = Min. + (Max. - Min.) \times .465$, the value was 57.9°, or 0.5° above the average mean temperature for June, calculated in the same way, in the thirty-five years, 1871–1905, inclusive (57.4°). The arithmetical mean of the maximal and minimal readings was 58.4°, compared with a thirty-five years' average of 57.9°. On the 30th the thermometer in the screen rose to 76.0°—wind, S.W. ; on the 1st the temperature fell to 42.8°—wind, W. The minimum on the grass was 40.9°, also on the 1st. The mean maximum

was 65.1°; the mean minimum was 51.6°; the mean grass minimum was 49.6°.

The rainfall was only .878 inch on 9 days. The average rainfall for June in the thirty-five years, 1871–1905, inclusive, was 1.990 inches, and the average number of rain-days was 15. The rainfall, therefore, and the rain-days were much below the average. In 1878 the rainfall in June was very large—5.058 inches on 19 days; in 1879 also, 4.046 inches fell on 24 days. On the other hand, in 1889, only .100 inch was measured on 6 days. In 1887 the rainfall was only .252 inch, distributed over 5 days. June, 1910, established an undisputed record for excessive rainfall in Dublin—the measurement being 6.211 inches on 19 days. In 1912, 2.595 inches fell on 23 days, and in 1913, 1.198 inches on 13 days.

The rainfall in Dublin during the six months ending June 30th amounted to 9.010 inches on 94 days, compared with 15.097 inches on 104 days in 1913, 13.756 inches on 110 days in 1912, 7.729 inches on 80 days in 1911, 18.632 inches on 111 days in 1910, 12.061 inches on 84 days in 1909, 11.729 inches on 107 days in 1908, 12.336 inches on 108 days in 1907, 12.641 inches on 109 days in 1906, only 6.741 inches on 67 days on 1887, and a thirty-five years' average of 12.030 inches on 96 days.

High winds were noted on 8 days, but never reached galeforce (8).

At the Normal Climatological Station in Trinity College, Dublin, the observer, Mr. Sidney A. Clark, reports that the mean height of the barometer was 30.099 inches, the highest reading observed being 30.39 inches at 9 p.m. of the 25th, the lowest, 29.76 inches at 9 p.m. of the 7th. The arithmetical mean temperature was 57.6°, the mean dry-bulb reading at 9 a.m. and 9 p.m. being 58.2°. The thermometer rose to 77.1° in the shade on the 30th, and fell to 41.0° on the 8th. The grass minimum was 35.0° on the 11th. Rain fell on 5 days to the amount of .902 inch, .314 inch being measured on the 20th. The number of hours of bright sunshine registered by the Campbell-Stokes sunshine recorder was 168.5, giving a daily average of 5.6 hours. The corresponding figures for 1905 were 217.6 hours and 7.3 hours; 1906, 210.3 hours and 7.0 hours; 1907, 129.4 hours and 4.3 hours; 1908, 181.4 hours and 6 hours; 1909, 158.7 hours and

5.3 hours; 1910, 139.9 hours and 4.7 hours; 1911, 190.9 hours and 6.4 hours; 1912, 161.7 hours and 5.4 hours; and 1913, 173.5 hours and 5.8 hours. The mean earth temperature read at 9 a.m. was 58.1° at a depth of one foot below the surface of the ground, 54.2° at a depth of 4 feet.

At Ardgillan, Balbriggan, Co. Dublin, Captain Edward Taylor, D.L., measured 1.38 inches of rain on 7 days, the heaviest fall in 24 hours being .53 on the 20th. The rainfall was .89 inch below the average of twenty-one years, while the rain days were 6 in defect. Temperature in the screen rose to 74.9° on the 29th and 30th, and fell to 39.0° on the 1st. Since January 1, 1914, the rainfall at Ardgillan amounts to 9.77 inches, or 2.91 inches less than the average, and the rain days number 85, or 8 in defect. The extremes of rainfall in June at Ardgillan in recent years have been—greatest, 4.62 inches in 1910 on 17 days; least, 1.20 inches in 1904 on 11 days.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, was 1.46 inches on 6 days. The heaviest fall in 24 hours was .56 inch on the 19th. The Malahide rainfall for 1914 so far amounts to 8.56 inches.

At the Ordnance Survey Office, Phœnix Park, Dublin, rain fell on 7 days to the total amount of 1.135 inches, .470 being registered on the 20th. The duration of bright sunshine was 193.8 hours, the largest daily duration being 14.4 hours on the 15th.

According to Mr. J. Pilkington, the rainfall at Stirling Clonee, Co. Meath (height above sea level, 231 feet), was .90 inch on 8 days. The heaviest day's fall was .37 inch on the 9th, after which date there were only three days with light showers. The rainfall of the first 6 months of 1914 at Clonee has been 10.28 inches on 91 rain-days.

At Cheeverstown, Clondalkin, Co. Dublin, Miss C. Violet Kirkpatrick recorded a rainfall of 1.79 inches on 10 days. The greatest falls in 24 hours at Cheeverstown were .50 inch on the 9th and .37 inch on the 20th.

Dr. C. Joynt returns the rainfall at 21 Leeson Park, Dublin, at 1.013 inches on 9 days, .350 inch having been recorded on the 9th. The half-year's fall was 8.443 inches on 87 days.

Mr. Harold Fayle sends the following abstract of the

observations taken by him at 19 Highfield Road, Rathgar, Dublin:—

Mean Height of Barometer	30.12 inches.
Highest corrected reading (25th, 9 p.m.)	30.43 ,,
Lowest ,, ,, (7th, 9 p.m.)	29.78 ,,
Mean Dry-bulb Temperature	56.8°
Mean Wet-bulb Temperature,	53.9°
Mean Vapour Pressure,	.37 inch
Mean Humidity,	80.3 per cent.
Mean Maximum Temperature,	65.6°
Mean Minimum Temperature,	48.8°
Arithmetical Mean Temperature,	57.2°
Absolute Maximum (29th and 30th)	77°
Absolute Minimum (11th)	39°
Lowest Temperature on Grass (1st and 11th)	36°
Highest Temperature in Sun (29th)	150°
Rainfall on 9 days,	1.07 inches.
Greatest Daily Rainfall (9th),	.35 inch
Mean Amount of Cloud	65 per cent.
General Directions of Wind	S.W., W., N.W.,

Writing from Belfort House, Dundrum, Co. Dublin, Dr. Arthur S. Goff states that rain fell there on 11 days to the amount of 1.23 inches, the largest fall on any one day being .44 inch on the 9th. A hail shower occurred on the 7th. The air temperature ranged from 41° on the 8th to 80° on the 30th. The mean temperature in the shade was 59°. The half-year's rainfall was 10.42 inches on 102 days.

At Manor Mill Lodge, Dundrum, Co. Dublin, Mr. George B. Edmondson registered a rainfall of 1.20 inches on 11 days. The greatest fall in 24 hours was .40 inch on the 9th. The mean temperature of the month was 58.2°, the extremes being—highest, 82° on the 30th; lowest, 37° on the 1st. The half-year's rainfall was 10.96 inches on 99 days, compared with 8.20 inches on 85 days in the same period of 1911, 16.51 inches on 114 days in 1912, and 18.52 inches on 104 days in 1913.

At the Sanatorium of the Dublin Joint Hospital Board, Crooksling, Co. Dublin, Dr. A. J. Blake, Resident Medical Superintendent, recorded a rainfall of 1.80 inches on 11 days. The heaviest fall in 24 hours was .62 inch on the 9th.

Mr. W. J. McCabe, on behalf of the Right Hon. L. Waldron, D.L., supplies the following record of the rainfall at Marino, Kil-

liney:—Rain fell on 6 days to the amount of .91 inch, the maximal fall in 24 hours being .40 inch on the 9th. The average rainfall in June at Cloneevin, Killiney, in the 24 years, 1885-1908, was 1.771 inches on 13.2 days.

Dr. J. H. Armstrong reports that at Coolagad, Greystones, Co. Wicklow, the rainfall was 1.15 inches on 10 days. The heaviest rainfall in 24 hours was .42 inch on the 9th. Hail fell on the 10th. Thick fog occurred on the 18th and 19th. The Welsh coast was seen on the 24th.

At Auburn, Greystones, Co. Wicklow, Mrs. Sydney O'Sullivan measured .87 inch of rain on 9 days, .39 inch being recorded on the 9th.

Dr. Charles Denys Hanan, M.D., reports that at the Royal National Hospital for Consumption for Ireland, Newcastle, Co. Wicklow, rain fell on 7 days to the amount of 1.27 inches, the maximal fall in 24 hours being .63 inch on the 9th. The mean temperature for the month was 56.4°, the extremes being—highest, 73° on the 29th and 30th; lowest, 42° on the 8th. The mean maximal temperature was 63.2; the mean minimal temperature was 49.6°.

The Rev. Arthur Wilson, M.A., reports a rainfall of 1.67 inches on only 7 days at the Rectory, Dunmanway, Co. Cork. On the 21st .85 inch was measured—.50 inch fell in one shower of 20 minutes' duration. On the night of the 19th .57 inch fell. The rainfall for the completed six months of 1914 amounts to 31.38 inches on 106 days, compared with 39.32 inches on 123 days in 1913, the average being 28.42 inches and 116 days. Thunder occurred on the 11th. The month as a whole was fine and very warm. From May 10th to June 15th (40 days) the rainfall at Dunmanway was only .38 inch. In the 79 days since Easter day only3.75 inches have fallen; whereas in the 79 days before Easter the rainfall had been 25.42 inches.

"OUR STUMMICK."

MANY children are so crammed with everything that they know nothing. In proof of this read this specimen definition: "Anatomy is the human body, which consists of three parts—the head, the chist, and the stummick. The head contains the eyes and brains, if any; the chist contains the lungs and a piece of the liver. The stummick is devoted to the bowels, which there are five—a, e, i, o, u, and sometimes w and y."

PERISCOPE

A TYPHOID CARRIER.

HERE, writes *La Quinzaine Thérapeutique* of the 10th of March, 1914, is the epilogue of the notorious history of the Cholet cases of poisoning, which have filled the lay journals for many days past. On the 17th of February last M. Chantemesse made known to the Academy of Medicine the results of an inquiry with which he had been charged by the Minister of the Interior concerning the poisonings, which resulted in the death of ten persons and the serious illness of many others. In an article published in the *Gazette des Hôpitaux* (No. 137, 1913), MM. Ollive and Collignon, from a study of the earlier of these cases, arrived at an opinion identical to that of M. Chantemesse. On his arrival at Cholet, M. Chantemesse, with MM. Picot and Rousseau, made an autopsy of a man who died, and they were successful in finding in the heart the pathological microbe. The anatomical lesions found were those of hyperæmia of the gastro-intestinal canal with fatty degeneration of the liver. As the idea of a criminal attempt was in the air, we seized the toxic cream of MM. Sarrazin, Papin and Gaudin (d'Angers) and placed it in charge of an analyst. We found in the blood of the sick a para-typhoid bacillus agglutinating by the blood of the sick and pathologically toxic to animals; the microbes closely resembled those found by M. Chantemesse in the heart of the cadaver. It is a mobile bacillus of the Gärtner group (*B. enteritidis*), which, cultivated in cream, was quite as active a toxin as those of Cholet, it also agglutinated by the blood of the sick of Cholet, though the same blood did not affect the ordinary paratyphoid bacilli, which ferment glucose, but not lactose, and which are pathogenic for man and animals when injected. Two persons who had not eaten of the cream, but had nursed the poisoned sick and by them had been contaminated took ill—one lightly, the other seriously. M. Chantemesse concludes, from cream prepared as was that of Cholet, that in thirty hours it becomes a marvellous mixture of the culture of many diverse bacilli, when we see the microbe

of the Cholet cream and the bacillus of Gärtner produce their special symptoms. The confectioner who prepared the cream carried in his intestine Gärtner's bacillus and with his soiled hands, insufficiently washed, contaminated the cream. M. Chantemesse recalls this fact in connection with the frozen cream in the case of Mme. Lafrage, and completely nullifies the finding of guilty of poisoning by arsenic brought against Mme. Lafrage. The fact being that M. Lafrage was poisoned accidentally by contaminated ice cream of which he ate, and Mme. suffered from this terrible error of judgment.

THE USE OF ETHER IN GYNÆCOLOGY.

M. R. Condamin (*Lyon Médical*, T. CXXII., No. 9) writes:—"We speak much to-day of the results obtained by the local use of ether, the most remarkable of which is its prophylactic action in the treatment of peritonitis and of serious abdominal lesions. In the following lines I confine myself to the domain of gynæcology, and to the grounds on which the treatment is based. The use of ether has long been confined to its antiseptic, sedative and resolvent properties. But for a long time past in the clinics of Laroyenne, Gouilliond and myself, the vagina has been disinfected by tampons of ether, with which the rugæ and fossa are vigorously cleaned out. By this means we cleared away the fatty substances of the vagina which neutralise the effects of antiseptics. At Paris, in the service of Tillaux, we applied freely compresses of ether to all inflammations, acute or chronic, and to cold abscesses. If I have appealed to great clinicians of the past on a method of treatment which is described as new, it is that their authority may rescue it from the finical exaggerations with which its youthful advocates embellish it. In gynæcology the ether treatment is applied by two methods, which may be used separately or in combination. It may be poured over a large surface of the abdominal wall, or—in a case of a localised inflammation—over the pelvic regions, or at the fundus of the vagina. Of the rectal etherisations recommended by Dr. Vernier I have no experience. Of the large dressings of ether applied to the whole sub-umbilical region, covered by a layer of oiled silk, it is incontestable that the effects are unusually good in all cases, in which formerly the pupils of Laroyenne and Fochier applied

blisters or topical vesicants, which were continued for many weeks. This was the usual treatment for acute metro-salpingitis and for diffuse inflammatory processes in the pelvis. By our modern method we secure the great advantage of a remarkable lessening in the violence of the pain, and of the distention of the abdomen, and sometimes an apparent resolution of the œdematous inflammatory matter in the pelvis. The temperature falls, and undoubtedly we get the impression that the local application has had an intense antiseptic action. On the other hand, a slight attack of cystitis may follow on the application, so that on the appearance of any albumen it becomes necessary to diminish the size of the etherised surface and to discontinue the application for some two or three days. I have seen these results secured for many years past. I am able to certify that the results obtained by ether judiciously used are resolvent, sedative, and soothing, with the great advantage that there is no risk on the side of either bladder or kidney. It is necessary that the ether should be applied continuously and in full measure. After many trials my two methods of technique, both simple, are as follows :—The pathological condition which justifies the treatment is slight, the inflammatory conditions or hyperæmia moderate, the pains become supportable, one application for two hours morning and evening being sufficient. We apply over the pubes a cotton wool compress, strongly impregnated with ether, this is immediately covered by a thick layer of cotton wool and a fold of oiled silk, and over all a large body bandage. Indian rubber sheeting is unsuitable and cannot replace oiled silk in this dressing. If in an hour's time the patient does not experience a sensation of warmth or burning the dressings should be undone and from 10 to 15 centimetres of ether added to the compress next the skin, and the dressings readjusted. In more serious cases, in which the patient should not be disturbed, use the method described below. Put in the outer bandage one or two small rubber tubes, one of the ends of which is at the centre of the compress impregnated with ether, and the other extremity of which is fixed to the outer bandage. By this arrangement we can, every two or three hours, without disturbing the patient, inject by a glass syringe some centimetres of ether into the layers of cotton wool. Not alone are these methods well borne,

but the patients themselves call for further doses of the ether, when the former are losing effect. As a variant to this method Dr. Vernier adds a small dose of chloroform to the ether, to increase its soothing effects. We have not had occasion to resort to this. Some patients, especially those of a sensitive skin, are very susceptible to its effects. The first applications are sometimes slightly painful ; but in a little time this exaggerated sensibility dies away. The local application of ether to the fundus of the vagina is less desirable, and I believe less efficacious. The etherised tampon is placed in the fundus of the passage, the anterior portion of which should be plugged with glycerine tampons to prevent the rapid escape of the ether ; this sometimes gives pain. In Vernier's classic account of the drug he describes ether as a feeble antiseptic. We dissent from this ; for experiment demonstrates that a trace of ether stays the culture of the bacillus of Eberth. In every case from this hour the many cases of the disappearance of phlegmonous inflammation and observations outside our circumscribed zone affirm the value of the treatment in causing resolution, without absolutely demonstrating it."

THE DOCTRINE OF CEREBRAL LOCALISATION.

M. R. Robinson (Académie des Sciences), *Gazette des Hôpitaux*, An. 87 No. 1, reports the case of a man who got a slight wound in the occipital region. The wounded man was sixty-two years old, and complained of some visual trouble, and finally of a difficulty in speaking. An ophthalmoscopic examination revealed a papillitis more marked on the left side than on the right. The man remained for a year without any trouble ; on the contrary, he appeared cheerful and content and was many times surprised whilst he was in the act of masturbation. Formerly he was known as a chaste, pure living man. At the autopsy, the patient having died in an epileptiform fit, the whole encephalon except the cortical portion was found to be a colossal abscess. The pus was fœtid and contained many anaërobic bacilli.

SUCCESSFUL TREATMENT OF SYPHILIS BY "MERLUSAN."

In *Der Militärarzt*, published at Vienna, a report has recently appeared from Garrison Hospital No. 14, Lemberg, on some

splendid results which have been obtained in the treatment of syphilis by "Merlusan." The trials covered forty cases. It was found that the results were fully equal in excellence and rapidity to those obtainable by any other means, and the findings of the Wassermann test which, with 62 per cent. of the patients, proved negative after a complete course of treatment, demonstrate the energetic action of the new remedy. Merlusan is given internally, in tablet form, and, being harmless and quite without ill effects on any of the patients, it has the great advantage of not interfering with the patient's everyday occupation. This new remedy for syphilis was described in the number of this Journal for March of the present year (Vol. 137, No. 507, third series, page 238).

VINCENT'S ANGINA.

℞. Methylene blue, 3 grammes
Glycerine, 5 grammes
Alcohol, 5 grammes
M. ft. lotio.

To be constantly applied on cloths over the affected part. *La Quinzaine Thérapeutique*, 25 March, 1914. [Vincent's angina is a diphtheroid throat affection, with inflammation and ulceration of one tonsil, and without any rise in temperature. It is caused by a spindle-shaped, fusiform bacillus, found in hospital dirt. Methylene blue, an aniline base, is prescribed with sugar two parts to 98, as a local application in diphtheria. It has the formula $NaC_{37}H_{26}N_3S_3O_9$, it is soluble in 1 in 50 of water, and its stain is readily removed by a solution of chlorinated lime.]

THE WELLCOME HISTORICAL MEDICAL MUSEUM.

The Historical Medical Museum, which was founded by Mr. Henry S. Wellcome in connection with the Seventeenth International Congress of Medicine, was re-opened on May 28th as a permanent institution in London. It is now known as the "Wellcome Historical Medical Museum," and is open daily from 10 a.m. to 6 p.m., closing at 1 p.m. on Saturday; entrance 54a Wigmore Street, Cavendish Square, W. Since closing last October the collections in the Museum have been considerably augmented and entirely re-arranged. Many objects of import-

ance and interest have been added, which it is hoped will increase the usefulness of the Museum to those interested in the history of medicine. Members of the medical and kindred professions are admitted on presenting their visiting cards. Tickets of admission may be obtained by others interested in the history of Medicine on application to the Curator, accompanied by an introduction from a registered medical practitioner. Ladies will be admitted only if accompanied by a qualified medical man.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

"*Sedobrol.*"

"SEDOBROL" embodies a novel idea, which has the advantage of a sound physiological basis. It is issued in the form of bouillon tablets, each containing 17 grains (1.1 grammes) of sodium bromide with only a trace of common salt. One or two tablets dissolved in a cup of hot water provide an appetising and savoury bouillon, which is given in insomnia, for instance, from a half to one hour before bedtime. The addition of an egg enhances the patient's illusion that he is simply observing a special diet, and the idea of a drug does not enter his mind. The advantages of administering "Sedobrol" in this manner are :—(1) Free dilution is ensured, which, together with the presence of the stimulating vegetable extractives, obviates gastric disturbances. (2) Bromide may be given in the form of a dietetic, and the patient is unaware of the presence of the drug. (3) It enables the physician to give bromide while gradually withdrawing the daily intake of sodium chloride, and this without rendering the diet insipid, an important factor in epilepsy. "Sedobrol" has been used with much success in the treatment of neurasthenia, insomnia, hysteria, migraine, and epilepsy. "Sedrobol" is prepared and has been introduced by The Hoffmann-La Roche Chemical Works, Ltd., 7 and 8 Idol Lane, London, E.C.

In Memoriam.

THE RIGHT HONOURABLE SIR CHRISTOPHER JOHN NIXON, Bart., P.C., M.D., LL.D., F.R.C.P.I.

Vice-Chancellor of the National University of Ireland.

After a long period of ill-health this distinguished member of the Medical Profession died on Sunday, July 19, 1914, at his residence, Roebuck Grove, near Milltown, Co. Dublin.

Christopher John Nixon was born in Dublin on June 29, 1849. His father was Christopher William Nixon, of Dublin, his mother was Mary Frances, daughter of John Joseph Hackett, Black Hill, County Kildare. He was educated at Terenure College and at Trinity College, Dublin. His medical studies were pursued in the School of Medicine of the Catholic University of Ireland, Cecilia Street, Dublin, in which he afterwards became Professor of Medicine, and in the Mater Misericordiæ and House of Industry Hospitals, Dublin. In due time he graduated in Arts and Medicine (1878) in the University of Dublin, taking the higher degree of Doctor in Laws in the year 1881. At the Summer Commencements on July 6, 1912, the University conferred upon him as Vice-Chancellor of the National University of Ireland the honorary degree of Doctor of Medicine on the occasion of the memorable celebration of the bi-centenary of the School of Physic in Ireland. Of this distinction Sir Christopher was justly proud, both as a personal distinction and especially as a compliment to the National University of Ireland by the ancient University of Dublin.

After graduating in Medicine in 1878, Nixon went to Paris in order to follow up his medical studies. On returning to Dublin, he was not long in gaining an assured position as a hospital physician and consultant. Indeed, while still quite a young man, he had already secured a lucrative consulting practice, and a sound reputation as an authority on diseases of the heart and of the nervous system.

His University degrees were not Sir Christopher's earliest qualifications to practise. In 1868, while only

nineteen years of age, he obtained the Letters Testimonial of the Royal College of Surgeons in Ireland, and in the following year he was admitted a Licentiate in Medicine and Midwifery of the King and Queen's College of Physicians in Ireland. This Corporation, now known as the Royal College of Physicians of Ireland, elected him a Fellow on St. Luke's Day, October 18th, 1876. He subsequently served as Censor of the College in the years 1881-1883 and 1887-1889, and on St. Luke's Day, 1900, he was unanimously chosen President of the College. He occupied the Chair with much dignity for two years.

Sir Christopher Nixon's chief public work was done in connection with the Royal University of Ireland and its successor the National University of Ireland, as well as with the Royal Veterinary College of Ireland. Prior to the dissolution of the Royal University he held the high office of Vice-Chancellor, and to a similar position he was elected on the foundation of the National University, continuing to discharge the duties incidental to the post as long as the state of his health permitted. Of the Royal Veterinary College of Ireland he may be described as one of the founders, as he was certainly one of its most active and enthusiastic supporters. To him the State recognition of the College was largely due, and his services were much appreciated by all who had the welfare of the great horse-breeding industry of Ireland at heart. With much propriety he was chosen President of the Royal Veterinary College, the interests of which he also represented for many years on the Council of the Royal Dublin Society.

From the purely medical side also Nixon's life was a busy one. In the Cecilia Street School of Medicine he filled in succession the Chairs of Anatomy and Physiology and of Medicine. For forty years he was Physician to the Mater Misericordiæ Hospital, of which he became the Senior Visiting Physician on the death of Dr. John Hughes on May 5, 1882. He made a special study of mental diseases, and was Consulting Visiting Physician through many years to the Central Lunatic Asylum, Dundrum, Co. Dublin. He was also a Consulting Physician in Lunacy to the High Court of Chancery in

Ireland. Quite recently he took an active part in endeavouring to have the Mental Deficiency Act extended to Ireland. A full statement of the important evidence which he gave before the Royal Commission on the Care and Control of the Feeble-minded in 1912 will be found in the number of this Journal for September of that year (Volume 134, Third Series, No. 489, page 192).

Sir Christopher Nixon was for many years Visiting Physician to the Royal College of St. Patrick, Maynooth.

Medical Politics also engaged Sir Christopher's attention, and from July 29, 1897, to the day of his death he sat on the General Council of Medical Education and Registration of the United Kingdom as Representative, first of the Royal University and afterwards of the National University of Ireland. In this honourable post he had succeeded the late Sir John Banks, K.C.B., who had represented the Royal University on the General Medical Council from 1880 to 1897.

So far we have traced Nixon's medical and academic life through its various stages. Public honours were bound to come to a man of such energy, intellectual power, and professional capacity. He received the honorary degree of M.D. from the Royal University of Ireland as well as from his Alma Mater, the University of Dublin. He was Physician-in-Ordinary to His Excellency the Lord Lieutenant of Ireland, a Deputy-Lieutenant for the City of Dublin, and a Justice of the Peace for the County of Dublin. In 1895 he was created a Knight Bachelor, and in 1906 a Baronetcy of the United Kingdom was conferred upon him. The last public distinction which he received on New Year's Day of the present year was at the hands of the King, who appointed him a member of His Majesty's Privy Council in Ireland.

Sir Christopher's contributions to medical literature were numerous and valuable. Many of them appeared from time to time in the pages of this Journal; others were published in succeeding volumes of "Transactions of the Royal Academy of Medicine in Ireland." In 1889 he published a "Handbook of Hospital Practice and Physical Diagnosis"—a demy octavo of nearly 350

pages, brimful of information and well worthy of careful study by the Medical Student even of to-day. He was not only an accomplished writer, but also a ready speaker. A man of strong opinions, he was not slow to advance them in eloquent and dignified language; but no matter how much he differed from other speakers in a debate, he invariably treated them with studied courtesy, even when using the two-edged forensic weapons of satire and wit.

Of his private life this is not, perhaps, the place to write at length. In 1872 he married Mary Agnes, daughter of the late Dominick E. Blake, Esq., of Carrowkeele, Co. Mayo, and grand-daughter of Joseph Blake, Esq., of Castlegrove, Co. Galway. They had seven children, of whom the following survive:—Christopher William, the present baronet, born in 1877, a Captain in the Royal Artillery; Mary Christina, married in 1912 to Major William Jack Preston, 97th Deccan Infantry; Josephine Francesca; Catherine Elizabeth. Sir Christopher was seen at his best in his suburban home, Roebuck Grove, in which he took great delight, and to which on many occasions he invited his large circle of friends, receiving them with cordiality and entertaining them with boundless hospitality as became an Irish gentleman.

The respect and esteem in which Sir Christopher Nixon was held by his fellow-citizens and his professional brethren received emphatic illustration in the large and representative attendance at his funeral on Thursday morning, July 23rd. Among many others, the Vice-President (in the absence of the President, who is abroad) and numerous Fellows of the Royal College of Physicians of Ireland were present at a solemn Requiem Mass which was celebrated in the Catholic University Church, St. Stephen's Green. The remains of the deceased were immediately afterwards borne to their last resting place in the vaults of St. Andrew's Church, Westland Row. The funeral cortège passed through the streets of Sir Christopher's native City amid touching manifestations of sorrow and sympathy with the members of the bereaved family.

J. W. M.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. VII.—*The Relation of Theory and Practice in the Operative Treatment of Genital Prolapse.*[a] By HENRY JELLETT, M.D.

MR. PRESIDENT, LADIES AND GENTLEMEN,

My first duty is to thank you for the great honour which you have done to the Irish School of Medicine, and to that branch of it which is represented by the Rotunda Hospital, in inviting me to deliver this address. I can only say that I know the honour is appreciated by all connected with the Dublin School of Obstetrics and Gynæcology. I have next to thank you on my own account, and to express my pleasure at the great honour which you have done me personally. I cannot tell you how great a pleasure it is to me to have been able to come to this great country, even though the shortness of my visit enables me to see only the fringe of it. Already, I know that I shall carry back the very pleasantest recollections, and I can only hope that I shall leave some pleasant recollections behind.

[a] Being the Address in Obstetrics delivered at the Annual Meeting of the Canadian Medical Association, held at St. John, N. B., on July 8th, 1914.

The subject which I propose to take as the basis of my address is one which has interested me for a number of years, and which must have the greatest interest for every operating gynæcologist, namely, "The relation of theory and practice in the operative treatment of genital prolapse." It is a subject on which a volume might be written, and yet it has not always received the close attention of the operator. I think there are few subjects in operative gynæcology in which men are more inclined to be led by the fashion of the moment, and to adopt such fashion without due consideration of its ultimate results, and without attaching sufficient importance to its anatomical effects.

I trust I have not infringed the spirit of my directions, which were to deliver an address on obstetrics. Personally I regard obstetrics and gynæcology as more or less conjoined, but my inclinations lie more in the direction of gynæcological practice. I have, therefore, assumed that I may translate the word obstetrics in its freest sense. Even if one wished to divorce gynæcology from obstetrics, one can say of the subject I have chosen, that although prolapse may be cured by the gynæcologist, it is, alas, often produced by the obstetrician.

I think that in the past the frequent failure of the operative treatment of prolapse has been due to two causes. The first of these is an insufficient anatomical knowledge of the relations and supports of the uterus, and the second is a desire to find a panacea which will be suitable for every case. The second cause is directly the result of the first. One can quite understand, for instance, how the routine treatment of uterine prolapse by ventral fixation appeals to one who does not recognise the abnormal strain to which a uterus once prolapsed is subjected in the future, and similarly one can understand the attitude of those who habitually recommend hysterectomy on the one hand, or extensive vaginal plastic operations—such as colporrhaphy and perineorrhaphy—on the other. It is such an obvious truism that, if one removes the uterus, it can no longer become prolapsed, that it is little wonder some

gynæcologists consider hysterectomy can cure prolapse. Again, it is so obvious that a prolapsed uterus ought to descend through the vagina, and cannot do so if the vagina is markedly narrowed, that it is not strange that other gynæcologists think colporrhaphy and perineorrhaphy alone can cure prolapse. While as to ventral fixation, what is more plausible than to think that once the fundus of the uterus is fastened in an irremovable position to the abdominal wall, by no possibility can prolapse occur again? Yet each of these reasonings is based on fallacy. The extirpated uterus has prolapsed once and for all, and is gone, but that does not prevent subsequent prolapse of the vagina, and genital prolapse does not consist of prolapse of the uterus alone. Descent of the uterus through the vagina can be prevented by a narrowing plastic operation, but that does not prevent the vagina as a whole from becoming inverted. The fundus of the uterus can be moored permanently to the abdominal wall, but that does not prevent the uterus elongating until its cervix and the vagina again appear outside the vulva. One might multiply other examples, but there is no need.

There are two cardinal points that one must remember in considering the treatment of prolapse. The first is that the exact lesions present differ to a very material extent in different cases. The second is that any treatment to be successful must follow such lines as enable us to alter and modify its details in order to suit the special lesions and complications of each individual case. (A diagram was here shown upon the screen illustrating special cases.) Each and every one of these conditions will come under the head of genital prolapse, with the exception, perhaps, of the case of simple vaginal hypertrophy of the cervix. Here, although the cervix may appear at or outside the vulva, still the condition is not primarily prolapse, but one is justified in regarding all the other conditions as phases or varieties of prolapse, each of which will require differences in its operative treatment. With these points in our mind, we come to the bed-rock of all operative measures, namely, the anatomy of the pelvis, and when

we understand it thoroughly we shall, perhaps, be in a suitable position to criticise older methods, or even to devise new ones.

I begin, therefore, by calling your attention to certain points of importance in the physiological support of the uterus and vagina, and I do it in the shortest manner possible. In one respect I ask you to give me your consideration. There is a considerable amount of divergence of opinion in regard to many of the points which I bring before you, and I ask you to remember that, as time will not permit of a discussion of these differences, I bring before you what I regard as facts, and what are my own deductions from them. It is no wonder that much divergence of opinion exists in regard to matters which at first sight appear to be so very capable of direct proof. There is no one so coy as the anatomist who comes to deal with pelvic anatomy, and the reason is not far to seek. I understand that the intelligent anatomist who is a good dissector can demonstrate to his own satisfaction and to the satisfaction of his audience practically any ligament or structure in the pelvis that he chooses for the moment to create. He can harden connective tissue with formalin and turn it into ligaments; he can exhibit muscles which in the living are incapable of demonstration; and he can resolve strong fibrous bands into succulent connective tissue. I hope my audience will not think from this that I want to undervalue the work which has been done in pelvic anatomy. It is far from me to desire to do any such thing, but I want to impress on you the great difficulty, if not impossibility, of demonstrating in the dissecting room subject the relations and structures of the pelvic floor as they are found in the living, and especially as they are found when modified as a result of the injuries of labour. The knowledge of anatomy is essential to the treatment of prolapse, but it is a knowledge which must be gained not alone in the dissecting room but in examination of the living.

The two organs which are primarily concerned in genital

prolapse are the vagina and the uterus, while, secondarily, we find that prolapse of the bladder is very common, and that prolapse of the rectum sometimes occurs.

The vagina, under normal conditions, is kept in place by three different structures. First, it is supported below by the converging bands of the levator ani muscle, with the coincident help of the investing fascia. Secondly, it is fixed to the pelvic wall by the vaginal suspensory ligament, which is a fold of the pelvic fascia usually described as springing from the pelvic wall in the neighbourhood of the ischiatic spine, and passing inward and slightly forward to the side of the vagina, and slightly posterior to a coronal median plane. I do not think, however, that this description is quite accurate, as I shall presently show. Thirdly, it is supported by its attachments to the cervix, and by the parts of the endo-pelvic fascia which have an insertion both into the cervix and into the upper part of the vagina.

The uterus is supported—I refer now to direct support—by its vaginal attachment, by the utero-sacral ligaments, and by the different layers of the endo-pelvic fascia which pass into it laterally and anteriorly. Its indirect support I will discuss in a moment.

Each one of these structures which I have mentioned can be demonstrated clinically, and can be definitely proved by any close observer to be responsible for the utero-vaginal support. It is an easy matter to recognise the relation of the levator ani muscle to the lower part of the vagina, and to see how the approximation of its lateral bands support both the perineum and the lateral vaginal walls. The suspensory vaginal ligaments are also capable of easy demonstration, and so are the utero-sacral ligaments. To demonstrate them one finger is passed into the rectum and a bullet forceps is applied to the point of the vagina or uterus at which one wants to demonstrate the ligamentous attachment. Suppose, for instance, the forceps first catches the cervix. As one draws it down one feels the utero-sacral ligaments become tense at each side until

finally their tension is sufficient to resist further descent of the cervix. If one then applies a second forceps to the upper part of the vaginal wall at the junction of the lateral and posterior walls and pulls upon it, the finger in the rectum will feel distinctly that the fascial band which runs to that particular point becomes tense. If the forceps is then applied successively to a number of different points lower in the vagina, and on the posterior wall, and traction is made on each in turn, one can demonstrate that, beginning above at the utero-sacral ligaments, and ending below about where the levator muscle crosses the vagina, there is a practically continuous ligamentous connection between the cervix and the posterior vaginal wall, and the posterior pelvic wall, and that this band is sufficiently strong to prevent more than a certain amount of displacement of the cervix or vagina by traction. The position of the band is shown approximately in the next slide which represents an illustration taken from Cunningham's Anatomy. I say approximately because is appears to me to run in too transverse a position, and I think that anyone who examines the attachments for himself as I have described will have no difficulty in proving that it really runs in a more posterior direction. If the pelvic organs are hardened in formalin, either while in position or after complete removal of the entire contents from the body, and if they are then cut in a series of horizontal slides, the position of the band will be very clearly seen. Such a method of examination, namely, by horizontal slicing of the pelvic contents, also demonstrates a very interesting and, I think, very important point, namely, that the utero-sacral ligaments apparently form the upper limit of this band, and that from a practical point of view, one may consider the cervix and vagina as fixed to the pelvic wall by two strips of fibrous tissue, each of which begins above at the level of the utero-sacral ligaments and extends down as far, at any rate, as the levator ani muscle.

If anyone requires further demonstration of the existence and importance of this band it will be obtained

during the course of Wertheim's hysterectomy. In this operation the last step in the freeing of the uterus is the division of the utero-sacral ligaments, and this allows the uterus to be drawn to a slightly higher level in the pelvis. One then has to cut firm fibrous bands which lie below the utero-sacral ligaments, and which run between the vagina and the posterior pelvic wall, and, when they have been cut to a depth of from a quarter to three quarters of an inch, the vaginal fornices move forward, and with the uterus can be drawn to a considerably higher level, and one is able to reach points which up to this were inaccessible.

The remaining direct supports of the uterus and vagina are formed by the endo-pelvic fascia, and are not so easily demonstrated. This fascia forms two distinct sets of bands, one set of which passes anteriorly and forms the anterior false ligaments of the bladder, while the other set pass out laterally, surrounding and beneath the uterine vessels, and are known as the cardinal ligaments of the uterus, or as Mackenrodt's ligaments. The latter pair, as a rule, can be clearly demonstrated in cases of prolapse where they have become lengthened. It is, however, difficult to estimate the actual amount of support which they give normally to the uterus.

The foregoing comprise practically the entire support of the uterus and the vagina, with the exception of the ligamentous attachment of the lower part of the anterior vaginal wall to the urethra, and through it to the posterior surface of the pubic bones. The indirect support of the uterus is, however, also a matter of considerable importance. This support comes from the pelvic floor and is mainly the result of the fact that the uterus lies horizontally in the pelvis with its long axis almost at right angles to the axis of the vagina. It thus offers the maximum surface of resistance to the pelvic floor, while the non-coincidence of its axis with the axis of the vagina prevents any tendency to its descent through the latter.

We must now see how the injuries of labour affect both

the direct and the indirect supports. The first and most obvious change is in the relation of the levator ani to the vagina. Deep tearing of the perineum destroys the slight attachments of the muscle to the central point of the perineum and so allows its lateral bands to diverge outwards, while actual tearing of the muscle itself destroys the continuity of its inner edge. The result is that the lateral bands are widely separated as shown in the slide, and that there is nothing to prevent the anterior or the posterior vaginal wall from bulging directly down through the vaginal orifice. Once the support of the lower part of the vagina is lost there is a tendency for the middle part also to descend because the posterior and lateral walls, instead of resting on the levator muscle, are unsupported, and have their pull transmitted directly to the suspensory fascia which I have described. This fascia must be a very potent factor in supporting the vagina under normal conditions, but it is apparent that it does not possess great powers of resisting a continuous strain, and that when such strain comes upon it it stretches, thereby allowing the middle portion of the vagina to descend. Clinically, however, I do not think that one often sees this progressive inversion. What happens, rather, is that, first, the lower part of the vagina protrudes, that then the vaginal fornices lose their support and descend, and that, finally, as a result of continued traction, the middle portion descends also.

The earlier descent of the upper part of the vagina is due to the alterations that occur in the supports of the uterus, alterations which usually result in the uterine prolapse, so to speak, overtaking the vaginal prolapse and eventually preceding it. The first direct step in the production of uterine prolapse, so far as the uterus is concerned, is backward displacement. This may occur as a result of the traction of a prolapsing anterior vaginal wall on the cervix, a traction which tends to pull the anterior cervical wall lower in the vagina, so carrying the body of the uterus back, or it may be due to simple falling back

of a large uterus as a result of general relaxation of its ligaments. Whichever it is the effect is very much the same. The axis of the uterus and that of the vagina tend to come into coincidence, and the resistance which the uterus offers to its own descent is altered from a surface corresponding in size to its anterior wall to a surface represented by a horizontal cross-section. In other words, practically all the support furnished to the body of the uterus by the pelvic floor is lost, and the weight of the uterus is thrown directly on to the utero-sacral ligaments and the different parts of the endo-pelvic fascia. The utero-sacral ligaments are strong bands, as can be easily proved clinically, but, like the vaginal suspensory ligaments, and, indeed, like all other fascial ligaments, once a direct pull comes on them they yield. Their normal function is probably to keep the cervix in its proper relation to the posterior pelvic wall, and by so doing to keep the body of the uterus in front, and, once they receive the entire weight, they fail and stretch. Once they fail, the weight of the uterus is transmitted directly to its vaginal attachments and to the endo-pelvic fascia, both of which are entirely unsuited to resist a direct strain. They, too, eventually yield, so with the uterus the upper portion of the vagina comes down. It is probable then that the most common sequence of events is, first, the prolapse of the lower portion of the anterior vaginal wall, with or without an accompanying prolapse of the corresponding part of the posterior wall, then the prolapse of the uterus and the upper part of the vagina, and lastly, the prolapse of the middle portion of the lateral and posterior vaginal wall. This order may, however, be altered, and, as one sees in certain cases not associated with labour, the uterus may be the first part to descend, the inversion of the vagina being directly consequent. In each case the condition of complete prolapse with inversion of the vagina is established.

There is a conditon frequently associated with genital prolapse which probably affords an indication as to the

order in which the prolapse has occurred. I refer to hypertrophy of the supra-vaginal portion of the cervix. This hypertrophy is not confined to the portion of the cervix between the insertion of the utero-sacral ligaments and the vagina, but it is most commonly situated there, and it seems to indicate that there has been a conflict between the pull of a prolapsing vaginal vault below and the support afforded by the resisting utero-sacral ligaments above. It is consequently reasonable, I think, to suppose that when one finds such hypertrophy present, the vault of the vagina has been the first part to prolapse and the body of the uterus the last. In some cases, indeed, one actually sees this stage before uterine prolapse has occurred, that is to say, the utero-sacral ligaments are of their normal length, the body of the uterus is in a practically normal position, the vagina is inverted, and the cervix is at the vulva, being enabled to come to this position as a result of its supra-vaginal hypertrophy.

So far I have not referred to the alteration in the position of the bladder that accompanies genital prolapse. It is the direct result of the pull of the anterior vaginal wall and of the yielding of the ligamentous attachment of the base of the bladder and of the urethra to the posterior surface of the pubis. It may be the first step to follow injury to the pelvic floor, or, on the other hand, it may be one of the later steps that result from the primary descent of the uterus. Once it has occurred its action in hastening complete prolapse is considerable, because it leads to straining and increased intra-abdominal pressure during micturition and because it causes direct traction on the cervix of the uterus.

So much, then, for theoretical considerations. The more one studies prolapse the more one sees how in its complete stage it is the result in most cases of an initial fault which, by altering the normal strain to which the suspensory mechanism of the uterus is intended to be subjected, throws them out of sympathy with one another.

This is the most essential point to grasp in planning a successful operation for prolapse, because just as the prolapse follows initially a single fault, so it will tend to recur after operation if a single weak point is left. Ventral fixation alone failed because the cervix was free to drop into the axis of the vagina, and so again to bring a direct pull on the utero-sacral ligaments. Vaginal plastic work alone failed because the descending uterus was capable of again dilating the vagina and forcing the muscles apart. Hysterectomy failed because it took no account of the fixation of the vaginal vault.

We have now to see conversely if, when once prolapse has resulted, it is possible not alone to bring back the different structures to their normal relation, but also to abolish all abnormal strains which may be thrown upon them.

I think that one may consider rational prolapse operations as consisting of three parts :—First, the restoration of the normal direct support of the uterus and vagina so far as possible. Secondly, the placing of the uterus in such a position that it offers the maximum resistance to descent. Thirdly, the removal of complications and associated conditions, the result of prolapse. I will deal with these three parts separately.

The restoration of the normal direct support of the uterus and vagina—We have already seen that these supports are four in number :—First, the utero-sacral ligaments; secondly, the endo-pelvic fascia; thirdly, the suspensory ligaments of the vagina; and fourthly, the levator ani muscle. The shortening of the utero-sacral ligaments with a view to restoring their normal action on the cervix is advisable in all cases in which they are stretched. It is essential when one is dealing with a small uterus, because such a uterus cannot be made to offer sufficient resistance to its own descent unless its direct supports are also reconstituted. Wertheim was, I think, the first to recognise the importance of shortening these ligaments, and his operation is carried out by the vaginal route, but

through the peritoneal cavity. I have also described a method of shortening the ligaments through the vagina at their point of attachment to the uterus, and this is the method which I usually adopt, as I consider it to be more easily worked in with the other stages of a prolapse operation than is Wertheim's method. It is unnecessary to enter into its details here, though I hope, if time permits, to say a word about them later. It is, however, necessary to say why utero-sacral shortening is so essential in the small uterus, and the reason, if one thinks of it, is obvious. In a moment I shall go on to say that I consider Wertheim's interposition operation to be one of the best methods of increasing the resistance of the uterus to its own descent. In this operation the uterus is placed between the anterior vaginal wall and the bladder. If the uterus is of sufficient size it is then directly supported by the levator ani muscle as well as by the vaginal wall, and, furthermore, since it is too large to allow its body to remain in position while the cervix rotates round it and comes down again to the vulva, the result of the operation is usually excellent. If, on the other hand, the uterus is very small, the cervix, if free, can drop down through the vagina, pulling the remainder of the uterus after it. If, however, we fix the cervix by shortening the utero-sacral ligaments it cannot rotate round the body and drop, while, at the same time, the strain on the shortened ligaments is slight and they do not tend again to elongate.

The shortening of the band of endo-pelvic fascia, known as Mackenrodt's ligaments, has also been advised in cases of prolapse. Some of the advocates of this procedure support their views by saying that Mackenrodt's ligaments must give a great deal of support to the uterus because their division during the course of Wertheim's hysterectomy allows the uterus to be pulled to a much higher level. This argument, however, in my opinion, is based on an inaccuracy. It is not the division of Mackenrodt's ligaments that allows the uterus to be pulled to a higher level, but rather it is the division, first, of the utero-sacral

ligaments, and then of the vaginal suspensory ligaments, as I have already mentioned. At the same time, although I do not believe that Mackenrodt's ligaments have all the effect on the uterus which is sometimes attributed to them, I think that when they are shortened they are capable of adding to the general support of the cervix. Such shortening, to be effective, must be considerable, and, if it is to be a safe procedure, it must be done with the greatest care, because, as we know, this part of the endo-pelvic fascia is pierced by the ureters, and if it is drawn out too far I think that it is quite possible that kinking of the ureters may result. A moderate degree of shortening is always brought about when supra-vaginal amputation of the cervix is performed in consequence of the insertion of these ligaments into the upper part of the vagina as well as into the uterine cavity, and, personally, I am not inclined to try to shorten them to a greater extent than is done in this way.

The support given by the vaginal suspensory ligaments is of the greatest importance, and if it was feasible to restore them to their original condition such a step would be most desirable. At the present time, however, I am not aware that any operator has suggested any effective method of dealing with these ligaments, and for my own part I can only say that I do not see that it is likely that such a method can be brought forward owing to their position. The nearest approach to shortening them is the fixation of the vault of the vagina to the peritoneum covering the anterior surface of the sacrum, as was suggested by Stanmore Bishop some years ago. The only objection I can see to this procedure is that it necessitates an abdominal incision, and this adds on rather too much to an already prolonged operation. Personally, I have not performed Bishop's operation, and I do not think that it has received from anyone the attention which, on theoretical grounds at all events, it deserves. Further work on the fixation of the vagina is very necessary, and, if it is carried out, it is possible that an effective procedure for

the restoration of the important fascial connection of the posterior vaginal wall may be devised. For the moment, however, we must consider that our efforts to restore the direct support of the vagina break down at this point, and that we are not capable of restoring effectively the vaginal suspensory ligaments.

The restoration of the levator ani muscle to its proper position, is, on the other hand, a matter of ease and simplicity. It is an essential part of all perineorrhaphy operations, and is a step of the utmost importance in prolapse operations. I do not propose to enter into the method of suturing it on the present occasion, but will confine myself to saying that it is always possible and usually easy, except when the muscle has practically disappeared on one or both sides in consequence of atrophy or excessive retraction.

The placing of the uterus in such a position that it will offer the maximum resistance to its own descent.—We have seen that under normal conditions the uterus lies practically horizontally in the pelvis, and that its resistance to descent may be expressed as that of a surface corresponding in size to the anterior surface of the uterus. On the other hand, when the uterus comes into a position of retroversion, usually the first stage of prolapse, the resistance that is offered may be expressed as that of a surface the size of a horizontal cross section of the uterus. Furthermore, when in a position of retroversion the uterus descends into the pelvis as a wedge, point downwards, and readily forces or dilates a way for itself through or between any opposing structures. Finally, when the uterus offers a maximum resistance to its own descent, not alone does this increased resistance directly hinder descent, but it also lessens the strain which is thrown on the direct supports, and this is a most important matter. I do not think that it is possible by any means to reconstruct the direct supports in such a manner that they will resist the entire strain of the unsupported uterus, but, if this strain can be brought back to its normal limit, and

then is associated with the reconstituted direct support, the tendency to prolapse will be overcome. The simplest method of bringing back the resistance of the uterus to the normal is by fastening the fundus in a position of anteversion. This can be done either by the shortening of the round ligaments or by the direct suture of the uterus to the abdominal peritoneum as is done in ventral suspension, and, as neither of these procedures in any way interferes with a subsequent pregnancy, one or other of them is indicated in the case of women still within the child-bearing period. It is, however, possible to increase the resistance of the uterus beyond the normal, but such a course inevitably affects detrimentally a future pregnancy, and may lead to the most serious results. Therefore, it is obviously only permissible in women who are past the child-bearing period, or in women in whose case there is no objection to producing an artificial sterility. The most important and the most reliable of such operations is undoubtedly Wertheim's interposition operation, and I have no hesitation in saying that it is the most valuable procedure which has been introduced of late years for the cure of prolapse, because, not alone does it increase the resistance of the uterus to its own descent, but it also helps to fix the vagina in position and to remove the prolapse of the bladder that both complicates and tends to perpetuate vaginal prolapse.

I have stated briefly of what the operation consists, namely, the bringing of the body of the uterus to lie between the bladder and the anterior vaginal wall. In this position it is entirely extra-peritoneal and so, necessarily, would not undergo proper development during pregnancy. The bladder is brought to lie wholly above it, and, provided the size of the uterus is sufficient, and that the cervix is fixed by the shortening of the utero-sacral ligaments, I consider the result cannot at present be surpassed. On the other hand, where the uterus is small and the cervix is not fixed recurrence of the prolapse is very liable to occur.

We now come to the third part of the rational prolapse operation.

The removal of complications and of conditions associated with prolapse.—There are a number of conditions which are either the direct result of uterine prolapse or one or more of its predisposing causes. In the cervix we may find hypertrophy—vaginal or supra-vaginal, so-called erosion, true ulceration, and laceration. In the body of the uterus we find endometritis and the different conditions which are usually grouped under the head "metritis" and which lead to uterine enlargement and tumours such as myomata. In the pelvic abdominal cavity we find again tumours arising either in the uterine appendages or from other organs, and ascites, while, lower down, we find very frequently prolapse of the bladder, more rarely prolapse of the anterior rectal wall, and, most commonly of all, perineal laceration. It is so obvious that these conditions must be removed if a successful result is to be obtained, that it is only necessary to say a few words about them. Erosion, laceration, and hypertrophy of the cervix are best treated by amputation, either vaginal or supra-vaginal, according to the nature of the case. Endometritis is treated by curetting. Uterine tumours and abdominal pelvic tumours call for removal, while increase in the side of the uterus, apart from tumour formation calls for reduction in its size by the amputation of a wedge-shaped portion from the body. This procedure is particularly necessary if Wertheim's interposition operation is to be performed, and, if it is omitted, trouble is likely to occur during the operation owing to the impossibility of providing sufficient vaginal mucous membrane to cover the large uterine body, and also later owing to the pressure which the large uterus causes at the lower part of the vagina. In such cases the excision of a wedge-shaped portion of the body is essential and does not add much to the length of the operation. Prolapse of the bladder is cured whenever the interposition operation is performed, and when the latter is contra-indicated, it can

be cured by the performance of anterior colporrhaphy, provided care is taken to push the displaced bladder back into its proper position before suturing the edges of the vaginal mucous membrane. The cure of a prolapsed rectal wall is directly associated with the cure of perineal laceration, and as this operation involves the suture of one of the direct supports of the vagina, namely, the levator ani muscle, I have already referred to in its proper place.

Mr. President, Ladies and Gentlemen, I have tried to place before you the theories on which I think the proper treatment of uterine prolapse must be based, and to indicate briefly the manner in which one transforms them into practice. To suggest that the result of operating along these lines is uniformly successful would be equivalent to saying that we had reached finality, and this is very far from being the case. All one can say is that we are beginning to adopt measures because of their probable permanent result as opposed to measures which give a merely temporary benefit. There is, however, much room for improvement. So long as the posterior vaginal wall is left, as it is at present, with its supports in an imperfect condition, so long must operative procedure be defective. There are other points, too, in which improvement must come. The interposition operation is excellent in a suitable case, but it is incompatible with pregnancy. The restoration of the pelvic floor is in most cases effective, but it may be again destroyed during a subsequent labour. The very means which we adopt to reduce an enlarged uterus to a normal size may subsequently result in producing uterine atrophy, and so in removing the most effective part of the modern prolapse operation, namely, the placing of the uterus under such conditions that it resists not alone its own descent but the descent of the structures by which it is surrounded.

I have thanked you on my own behalf for the honour you have done me, and I could only wish that, for the reputation of the school which I represent, you had selected one

who was more suited to put before you some of the problems of modern obstetrics and gynæcology and their solution.

ART. VIII.—*Insomnia.*[a] By THOMAS JAMES KELLY, M.D. Univ. Dubl.; Richmond Hospital, Dublin.

INSOMNIA is a word which means literally want of sleep, but it has come to be applied popularly to all degrees of disturbances of the night's rest.

The mysterious condition of repose in which our consciousness is in abeyance, and which we call sleep, has ever been a subject of interest and investigation, but we still know very little of its true nature or the ultimate physical conditions upon which it depends. Cerebral anæmia seems to be an important factor, and this is probably associated with exhaustion of the brain and chemical changes due to an accumulation of fatigue products, with consequent diminished receptivity for afferent stimuli. Dr. Howell, of Philadelphia, has made several contributions to the physiology of sleep. By means of a plethysmograph he was able to watch the relationship that existed between sleep and the circulation, more particularly in reference to skin circulation. Arterial tension was seen to fall slowly before the onset of sleep, and continued to sink until deep sleep was reached, and then only began to rise during the waking period. The charts produced by this instrument were very interesting, as showing not only the general curve, but also intermediate curves which represented sensory or bodily stimulation which occurred during sleep, and which remained, one may say, in the subconscious area. The whole of the skin is, as it were, flooded during sleep, while the brain is blanched. No similar increase seemed to occur in the internal viscera. The temperature of the brain and of the bowel was said to be the same. From

[a] A Thesis read for the Degree of Doctor of Medicine in the University of Dublin, June, 1914.

this it does not follow that sleep depends only on brain anæmia. At one time it was thought rather to depend on venous congestion. But allowing that there is a degree of anæmia, probably the vasomotor system is involved ; and Dr. Howell looks to the investigation of this vasomotor system as leading to the vascular changes which undoubtedly are present.

Sleep disturbance depends upon many circumstances in ordinary life when the health is apparently robust, but in its more serious manifestations sleeplessness is mostly related to conditions of disease in which the normal balance of organic or functional activity is interfered with.

Apart from pain and organic disease, perhaps the most common causes of insomnia are overwork and worry. The one condition like the other leads to the accumulation of an excess of waste in the body, and upon this there ensues, in time, disturbed digestion, nervous irritability, mental depression and sleeplessness. In those who are predisposed one of the earlier consequences of overwork and worry is neurasthenia, and in this unstable state of the nervous system sleep disturbance is one of the most depressing associations. In the milder forms of neurasthenia it takes the form of light and easily disturbed slumber, which is often interrupted by dreams mostly bearing upon the events of the preceding day. In more advanced stages of the disease insomnia may become the most clamant symptom, all attempts at sleep being futile without the aid of some form of sedative. Next to worry and work, and often associated with either or both, some form of disturbed digestion is responsible for many restless and sleepless nights.

Insomnia, which accompanies all painful and pyrexial illness, becomes part of the general disturbance of health, and its treatment is merged in the management of the foundational conditions.

What I desire especially to direct attention to is, not the insomnia which is caused by acute disease, but that form which is a chronic condition induced by the wear

and tear of everyday life, and in the main is due to digestive disturbance. Whether this digestive disorder is to be looked upon as cause or effect, it is difficult to say, but it seems almost inevitable that metabolism must be influenced by any condition which so upsets the general economy as to encroach upon the resting-time requisite for the recuperation of spent energies, and it is not unlikely that, in most cases, a vicious circle becomes established whereby digestive faults are accentuated by insomnia, to which in their turn they contribute materially.

Apart from the indigestion, which is symptomatic of organic disease in the stomach or elsewhere, there are two varieties of the functional type of dyspepsia which are closely associated with neurasthenia on the one hand and with insomnia on the other, and which when present must be dealt with before either the neurasthenia or the insomnia by which they are accompanied can be cured.

The one type which may conveniently be called the asthenic type of indigestion is dependent upon a want of power in the stomach as regards both secretion and contractility, and is met with in people—mostly women—who are badly nourished, pale, thin, and run down. They complain of loss of appetite, flatulent distension and stomach discomfort immediately after taking food, eructations that are sometimes sour and often offensive, a fear of food because of its effect in increasing discomfort, and a desire to relieve the situation by vomiting. These patients are always troubled by persistent insomnia, or at best short and unrefreshing sleep. It is not uncommon in these cases to find a displacement of the right kidney accompanied in some instances by a sagging of all the abdominal contents, which causes the patient to experience a wearying sense of bearing down.

The other or sthenic type, more common in men than in women, presents a striking contrast to that just now described. The patient is often well nourished and plethoric. He complains of pain three or four hours after food, which is relieved by an alkali such as bicarbonate

of sodium. He has a good appetite and is seldom sick. His sleep at night is uncertain, and is often disturbed at about 3 a.m. by "hunger pain." His bowels are confined, and he is depressed about himself and curiously introspective. On examination the stomach is found dilated, frequently below the umbilicus, due partly to enfeeblement of the muscular coat and partly to spasm of the pyloric and cardiac orifices. There is an excess of hydrochloric acid and also of organic acids. This sthenic type resembles the clinical picture of duodenal ulcer, but in the purely functional cases there is no hæmatemesis or melæna. The symptoms disappear under suitable medicinal and dietetic measures. The insomnia which accompanies these two varieties of disturbed digestion can be cured in the asthenic cases by stimulating the gastric functions mainly by the use of a non-fluid diet and by giving a simple bitter alkaline mixture before each meal, such as—

℞ Sodii bicarbonatis,	...	gr. 20
Tinct. nucis vomicæ,	...	♏. x
Tinct. zingiberis	...	♏. xx
Infusi gentianæ co., ad		℥ j

In the sthenic cases the treatment must be essentially sedative. It should aim primarily at counteracting the hyperacidity which is the chief disturbing factor. To this end milk should be the main food for three days, tea should be avoided, red meat used sparingly, sugar and starches left out altogether. Medicinally each meal should be preceded by a sedative mixture such as :—Tincture of belladonna and tincture of opium, of each ♏. x ; solution of chloride of adrenalin ♏. x, spirit of peppermint to ℥ j, to be taken in one teaspoonful of water a quarter of an hour before the meal. This combination of drugs serves to control the glandular secretion of the stomach and diminishes the excitability of the mucous membrane.

I have dwelt at some length upon this question of the treatment of dyspepsia because a disturbed state of

digestion is such a common cause of insomnia. Many people who become the life-long slaves of hypnotics and sedatives would never have acquired the habit if their digestive disturbances had been treated at the outset.

Many devices have been suggested as a means of procuring sleep for those who, apparently healthy and free from strain of any kind, are yet unable to command it. The drowsy effect of monotony is a well-known sedative, the enumeration of figures, the falling of rain, the droning voice of an uninteresting and prosy reader are familiar examples.

In mild cases of insomnia change of scene, a sea voyage, moderate exercise in the open air, temporary withdrawal from the ordinary activities of life are each and all not to be neglected.

Massage, especially when practised thoroughly and rapidly over the abdomen, a hot bath, a mustard foot bath, a wet pack applied to the body, all act by producing anæmia of the brain, and so bring about a refreshing sleep.

When all these measures fail recourse to drugs of the narcotic and hypnotic class becomes a necessity. The most certain is morphine, though its use is not to be advocated.

When sleep is prevented by neuralgic or muscular pain aspirin, phenazone, acetanilide, exalgin, phenacetin, by relieving pain, assist in inducing sleep.

Of all the hypnotics the bromides are the least harmful, and a full dose of one or other of the salts is sometimes sufficient to procure sleep.

Next to the bromides, chloral hydrate is the most valuable hypnotic. It should not be given in cardiac cases.

Hyoscine is one of our most powerful hypnotics, and is said never to induce a habit, but owing to its toxicity care must be observed in its administration.

Of the vast army of recent hypnotics no mention need be made. The demand for them obviously exists, else the supply would not be forthcoming in such luxuriant

abundance, and the inference would seem to be either that humanity is more sleepless than it used to be, or that it is less tolerant of occasional disturbance of its night's rest.

ART. IX.—*Treatment of Syphilis by Salvarsan in Dr. Steevens' Hospital, Dublin.* By H. C. SMYTH, L.R.C.P. & S.I., House Surgeon; and G. E. PEPPER, L.R.C.P. & S.I., Assistant House Surgeon.

So much has been written on the dangers of salvarsan treatment of syphilis that it may not be out of place to refer to the system adopted in this hospital for its administration, and which in eighty cases has not only been without ill effects, but has in all cases, with one exception, proved beneficial.

Some of the earlier patients were treated by intramuscular injections into the gluteal region, according to the method devised by Alt, but it was found that painful swellings, and sometimes ulceration, resulted, causing the patients considerable suffering, while the beneficial results aimed at were not always attained.

In consequence we adopted intravenous injections, using the following technique:—The urine is examined for albumen and sugar, and should either be present it is looked on as a contra-indication to the injection until general treatment has been used lest the elimination of arsenic should further damage the kidneys. All heart lesions are also looked on as contra-indications.

The patient is prepared the night before the injection as for a major operation, and a purgative is administered, the site of injection being shaved, washed with soap and water, followed by ether and alcohol, and dressed with aseptic dressings. On the morning of operation a light breakfast, consisting of a cup of tea and a litle toast, is allowed at an early hour.

The site of election is always the median basilic vein immediately below the bend of the elbow, both because it is easily accessible and because it allows a firm, even sur-

face for the needle to rest on while in position. A tourniquet consisting of a plain piece of rubber tubing is tied around the arm to render the veins more distinct, or the arm may be placed in a hot arm-bath for five minutes.

In suitable cases the needle can be entered directly through the skin, the vein being rendered tense by a few sharp blows with a damp sterilised towel to facilitate the puncture. An immediate flow of blood shows that the needle has entered the vein. The needle is then pushed on for about 3 c.ms., keeping the point as close as possible to the anterior wall of the vessel. It is interesting to note that the veins which show a distinct blue colour are more easily entered than those which appear much larger but less blue in colour, the former lying closer to the surface.

We, however, almost always adopt the method of injecting 5 mins. of a 5 per cent. solution of novocaïne, combined with 1 per cent. of 1/1000 adrenalin, and then cutting down on the vein. This method has the advantage of being more aseptic and avoids the risk of introducing salvarsan into the loose areolar tissue through accidental wounding of the vessel wall. We have seen such an accident result in extensive sloughing with the subsequent formation of fibrous tissue which limited the movement of the joint.

This method is open to the objection that a local infection may result, but with strict attention to aseptic methods such a result is most unlikely, and has never occurred to the writers.

The injection is prepared in the following manner :— The salvarsan is first dissolved in 20 c.cs. of freshly redistilled water in a sterilised mortar. A 15 per cent. solution of sodium hydrate is then added drop by drop with constant trituration until a creamy precipitate is formed, and this is re-dissolved by the further addition of sodium hydrate, in all 25 to 30 drops are added, the resulting fluid being distinctly alkaline in reaction.

The apparatus used for injection consists of two glass cylinders, each holding 120 c.cs., and connected by means of rubber tubing 45 c.ms. long to the limbs of a Y-shaped

piece of glass tube. The other limb of this tube is connected to the needle by another piece of rubber tubing of same length. In each tube midway between the cylinders and Y-piece a filter and a clip are fitted. These filters are made of glass and contain tightly packed glass wool which is inserted and fused in position during the manufacture, and not forced into the filter afterwards, thus avoiding the danger of glass dust getting into the circulation. They are so constructed that they act best in one direction, and are sterilised by washing out in opposite direction with pure nitric acid, followed by water. Close to the needle a small piece of glass tubing is let into the rubber, so that the flow of fluid can be observed.

The cylinders are now filled with normal saline at a temperature of 42° C., and the flow through the apparatus is observed, the temperature of the emerging fluid being found to be approximately 38° C., which is the temperature aimed at on entering the vein. Both tubes are now clamped, the salvarsan added to one cylinder, and the tubing allowed to pass through a basin of water at the same temperature as the saline to avoid loss of heat. A tourniquet, as already described, is now applied to the middle of the arm, an incision is made, the needle, disconnected from the apparatus, is inserted into the vein, and immediately blood flows from the needle the tube from the saline is connected to the needle and the tourniquet is taken off.

Should the vein be accidently injured the saline will at once cause visible infiltration of the tissues, and the needle should be withdrawn and reinserted. If the flow is satisfactory the saline tube is now clamped and the salvarsan is allowed to flow, and when it has all passed more saline is added so as to wash all traces of the drug away from the site of puncture. In all about 340 c.cs. of fluid are injected, and it is allowed to enter the vein very slowly, about ten minutes being the time taken. The wound is then closed by one silkworm gut suture, and pressure applied by an aseptic dressing.

Having found some delay in the healing of the wound

due to movements, we now make it our practice to apply a piece of straight splint wood, 30 c.ms. long, over the anterior surface of the elbow so as to prevent movement, and we find that this allows the stitch to be removed in two days and the wound to be healed.

The great advantage of an apparatus such as described is the accessibility of every part of it for cleaning and sterilising purposes. Our practice is to take it asunder after use and wash it out thoroughly. It is then reassembled and sterilised by steam before being used again.

Space does not permit us to discuss the various number of injections given to any one case, but in our experience the best results appear to be obtained when three injections are given at intervals of six weeks, intra-muscular injections of 1 c.c. of grey oil containing .1 grm. of mercury being given weekly into the gluteal region during the intervals.

In some cases, however, particularly those in which the skin lesions had become secondarily infected, we started treatment by giving six weekly injections intra-muscularly of .05 grms. of calomel suspended in a neutral fatty base. In other cases we gave only one salvarsan injection and continued treatment by three courses of nine weekly injections of grey oil as above, with six weeks' rest between them, followed by two courses of six and four in-injections respectively, with six weeks intervals between them (see Case III.).

All our patients are afterwards put on mercury, either—

R. Liq. hydrarg. perchloridi,	℥ iss ;
Potass. iodidi,	ʒ ii ;
Ammon. carb.,	ʒ i ;
Dec. sarsae comp, ad	℥ vi.
Ft. mistura	
S. ℥ ss. ter in die.	

when patients live at a distance, or weekly injections of grey oil when they can attend the hospital.

We should like to point out that the majority of patients met with in hospital are in a very bad condition due to

want of cleanliness and neglect on their part, and they usually present the complications of soft chancres, gonorrhœa, and even phagedæna. It is also very difficult to show statistics of cures, as such patients on leaving hospital with all symptoms gone, believe they are cured, and, although the necessity of attending for further treatment is impressed on them, at least seventy-five per cent. never return.

Wassermann's test is always carried out before treatment, and in 95 per cent. of our cases it becomes negative fourteen days after the first administration of salvarsan. Notwithstanding subsequent mercurial treatment we find, however, that the test tends again to become positive in seventy-five per cent. of cases, but rapidly responds to a further injection of salvarsan and remains negative with mercurial treatment.

It has been stated by some writers that tertiary syphilis is not amenable to salvarsan treatment, but we have had very favourable results when the drug was combined with grey oil injections and potassium iodide by the mouth, as illustrated by the following case :—

Case I.—G. G., aged thirty-three years. Admitted to hospital on the 25th of March, 1914. Contracted disease nine years previously, and was treated at that time with mercury for six months. On admission he complained of pain and tenderness over the sternum, fetid discharge from nose, perforation at junction of hard and soft palate 5 m.m. in diameter, ulcers on tonsils. Was given 20 grs. of potassium iodide three times a day for a fortnight without showing any signs of improvement. Wassermann test was strongly positive. On the 8th of April, 1914, .5 grm. salvarsan was administered, and seven days afterwards pain and tenderness over sternum had disappeared, nasal discharge was greatly diminished and less fetid in character, ulcers on tonsils much healthier, and palate showed marked improvement. Patient was then discharged from hospital for the country and given mercury and potassium iodide mixture as above. On his return a month later the ulcers on the tonsils were found completely healed, nasal discharge almost gone, and perforation of palate

barely visible. He had no further trouble with pain over the sternum. He was then put on a course of weekly injections of grey oil and 10 grs. potassium iodide by mouth three times a day, and up to the time of writing is keeping well, general health greatly improved and bodily weight increased by 10 lbs. since commencement of treatment.

The following cases are worth mentioning :—

Case II.—G. N., aged thirty-seven years. Admitted to hospital on the 2nd of February, 1914. Contracted disease two years ago, and was under mercurial treatment by the mouth up to January last, which he carried out conscientiously. During the second year several Wassermann tests were made, and were all positive. On the 4th of February, 1914, he was given .6 grm. salvarsan intravenously, and discharged three days later. Fourteen days later his Wassermann test was negative. As the patient could not attend for mercurial injections he was given a pill containing the following :—

℞. Hydrarg. iodidi viridis,
Ext. opii, āā. gr. 1/3
Ext. gentian., q. s.
Ft. pilula
S. unam terindie, post cibos

On the 28th of May Wassermann was, and at the time of writing is still, negative.

Case III. illustrates the one salvarsan and course of grey oil injections previously alluded to.

S. W., aged nineteen years. Admitted on the 30th of July, 1913. Contracted disease about 8 weeks previously. Primary chancre on penis. Inguinal glands swollen. Secondary rash well marked. Ulcers on tonsils. Complicated by gonorrhœa and phimosis. Wassermann positive. On the 3rd of August, 1913, .5 grm. salvarsan was administered intravenously. In four days rash began to fade. Glands diminished in size. Throat much better. Chancre was healing and disappeared in ten days, Wassermann being negative on the sixteenth day. Owing to complications he was detained in hospital until the 30th of August, 1913, but a course of grey oil injections was commenced one week after the salvarsan, and continued up to the 3rd of May, 1914, when Wassermann was still negative.

Treatment was stopped and patient was instructed to report in three months' time.

After effects :—We have not experienced any severe symptoms of arsenical poisoning amongst our patients, but seventy per cent. of them developed a rise of temperature varying from 99° to 102° F. on day of injection, falling to normal following day. Vomiting or nausea a few hours after injection occurred in fifteen per cent., but did not persist. In seven per cent. slight rigors occurred. We observed one case of diarrhœa.

The only patient who gave us any cause for anxiety was a boy with extensive tubercular disease of the lungs and larynx for whom salvarsan was recommended. .4 grm. was given intravenoulsy. One hour afterwards he developed a severe rigor lasting half an hour, became quite cold, cyanosed, and complained of severe pain in his chest, with difficulty in breathing. Hot jars and stimulants, together with hot fomentations to chest, soon gave him relief, and he rapidly recovered. No further bad symptoms supervened.

ART. X.—*Clinical Report of the Rotunda Hospital for One Year, November 1st, 1912, to October 31st, 1913.*[a] By HENRY JELLETT, M.D. (Dubl. Univ.), F.R.C.P.I., Master; and DAVID G. MADILL, M.B. (Dubl. Univ.), and R. MARSHALL ALLAN, M.B. (Edin. Univ.), Assistant Masters.

(*Continued from page 114.*)

GYNÆCOLOGICAL REPORT.

DURING the year, 585 patients were admitted to the Gynæcological Department, being two less than those admitted in the preceding year, 463 operations were performed, and the total deaths were eight—*i.e.*, a mortality of 1.73 per cent. Of the eight deaths, one occurred three months

[a] Read before the Section of Obstetrics in the Royal Academy of Medicine in Ireland, on Friday, May 22, 1914.

after an extensive operation for pelvic tuberculosis, and was due to generalised abdominal tuberculosis associated with fatty degeneration of the liver. One death occurred in a case of pelvic tuberculosis, associated with carcinoma of the ovaries and of the stomach, and was due to complete intestinal obstruction. One death was due to typhoid fever and perforation of the intestine in a patient admitted from the Extern Maternity, under the belief that she was septic. One death occurred as the result of general tubercular peritonitis a month after an exploratory laparotomy for tubercular peritonitis, at which it was impossible to do anything. One death occurred from septic peritonitis following a very extensive Wertheim's hysterectomy for epithelioma of the cervix. This patient also suffered from mitral stenosis. A second death occurred from peritonitis after myomectomy. One death occurred in a patient who was admitted suffering from puerperal pyæmia, which apparently dated from a six weeks' abortion that had occurred some seven weeks or so previously. As the patient did not improve, it was decided to do an exploratory laparotomy, although there was no definite evidence of thrombosis. At the operation no thrombosis could be found, and so the right ovarian and uterine veins were tied. No benefit, however, resulted from the operation, and the patient died nineteen days later.

The number of major operations has been very much the same as in previous years. In forty cases hysterectomy was performed, with thirty-eight recoveries. Amongst this number are included six cases of Wertheim's radical hysterectomy. One death occurred amongst these, and one death in a case of tuberculosis, which necessitated resection of a part of the rectum. In thirty-one cases abdominal myomectomy was performed with one death, as already mentioned. Approximately the same number of operations on the tubes and ovaries was performed as in other years. In twenty-five cases operations were performed for genital prolapse—a term which includes

complete and partial prolapse of the uterus and marked cystocele. Vaginal shortening of the utero-sacral ligaments was carried out in sixteen cases, interposition of the uterus by Wertheim's method in fifteen cases, the two operations being sometimes performed singly, and in other cases in association with one another. They were associated with such other plastic vaginal operations as were found necessary.

I wish now to refer more particularly to a few cases of special interest which occurred during the year:—

Case I.—*Bi-cornuate Uterus with Double Vagina.*—M. E., aged forty-two, unmarried, was admitted complaining of purulent discharge from the vagina and pain in the lower part of the abdomen. On examination a cystic swelling was found on the left side of the vagina, extending the whole way up. The uterus was retroverted, and lay at rather a high level. Pressure on the swelling caused pus to pour out through an opening at the upper part of the vagina. The abscess was opened and a small bit of its wall removed for examination. The Pathologist's report showed that the piece of wall was covered by squamous mucous membrane on both sides, this showing that the cavity must be a second vagina, and not, as was thought first, a vaginal cyst lying beside a single vagina. Accordingly, the entire septum between the two vaginæ was split up, thus throwing the second vagina into the main one. Further examination showed that, on the left side of the retroverted uterus, there was a firm swelling, which felt somewhat like a myoma. As I desired to cure the displacement, I opened the abdomen with the object of doing a ventral suspension, thinking that I should most probably find a bi-cornuate uterus. Such a uterus was found, as I expected, and I removed the left horn corresponding to the imperfect vagina. The patient made a good recovery.

Case II.—*Suppurating Ovarian Cyst.*—M. M., aged twenty-seven, married a year and three months, was admitted in April. She had been confined in the previous March, and complained of swelling in the abdomen for the past fortnight. The swelling was very painful and growing fast, and the patient was apparently very ill. Vaginal examination showed that the swelling was cystic and extended

into the pouch of Douglas, and was apparently an abscess. Accordingly, an opening was made into the pouch of Douglas through the posterior fornix, and many pints of pus came away. While trying to enlarge the opening in the fornix by a clamp, the latter apparently perforated the uterus, which was subsequently found to be excessively friable and rotten, and to which the abscess sac was densely adherent. This perforation was suspected from the amount of blood which poured through the cervix, and was confirmed by the passage of a sound into the uterus. Vaginal hysterectomy was then begun, but had to be abandoned because the uterus was densely adherent to the cyst wall, and the latter could not be brought down through the vagina. Accordingly, the abdomen was opened, and the abscess was found to be situated in an ovarian cyst, which had become septic after the confinement, and which was densely adherent to the rotten uterus, to the rectum, appendix, &c. These adhesions were separated, and, as the patient was showing signs of collapse, operation was hastened as much as possible, hæmorrhage being controlled by clamps passed up from the vagina, the cyst and the uterus being thus removed. Part of the cyst wall was so firmly adherent to the rectum that it could not be removed, and so was left behind. The pelvis was packed with iodoform gauze, and the abdominal wound was closed. Examination of the pus which came from the abscess showed the presence of numerous streptococci and also of staphylococci. The patient, however, made an uninterrupted recovery, stock and autogenous vaccines being administered.

Case III.—*Full Term Abdominal Pregnancy.*—This case has been already recorded, but it is so remarkable that further mention must be made of it here. K. W., aged thirty-eight, married fifteen years, having had four children and four abortions, was admitted to the Maternity Department apparently pregnant and up to full term. She stated that about six weeks ago she thought she was getting into labour, but that nothing further had happened since then, and that she had not felt fœtal movements. As the fœtus was obviously dead, an attempt was made to induce labour by Krause's method. The cervix seemed to be hard and small for a pregnant cervix, and otherwise was normal. A bimanual examination was made, but no information was got from it, largely because the patient was straining hard under

the anæsthetic. Two bougies were then inserted through the external os and allowed to take their own direction. They met with no special resistance. Tents also were inserted in the cervical canal, and the vagina was packed with iodoform gauze soaked in sterile glycerine. The next day, as uterine contractions had not occurred, the tents and bougies were removed and a fresh set of tents were inserted. The day after, these tents were removed by me. The cervical canal was well dilated, and the fœtal head could be felt low in the pelvis. I pushed up the head and brought down a foot, and extracted the child by traction on the foot, during which time the cervix tore posteriorly. I considered that I was delivering a fœtus which lay in the uterine cavity in the ordinary manner. The fœtus was macerated, and I then attempted to remove the placenta, but when I did so I found that my hand went into a smaller cavity on the left, and could also be passed into a larger cavity on the right which extended up towards the liver. The placenta could not be felt, but a piece of omentum came down into the larger cavity, and the intestines could be felt. I considered that I had passed my fingers through the wall of a very thin and soft uterus. The abdomen was accordingly immediately opened, when the following state of affairs was found. There was a slight amount of blood in the abdominal cavity, in which the placenta lay free. This was removed, and it was then discovered that the fœtus had lain wholly outside the uterus in a sac which probably had originated in the right broad ligament. It extended somewhat towards the left and upwards on the right side as far as the liver. The posterior lip of the cervix was torn, the tear extending through the posterior fornix. The lower part of the uterus seemed very soft and friable. Supra-vaginal hysterectomy was rapidly done, and then the cavity in which the fœtus had lain was packed with iodoform gauze, the end of which was brought into the vagina, and the abdominal wound was closed. Two possibilities were present in this case, and it is very difficult to decide which actually occurred. It is possible that the case was one of extra-uterine pregnancy from the beginning, and that the bougies and tents passed through a very congested and soft uterine wall and gradually made the opening sufficiently large to enable the fœtus to be drawn down through it. The second explanation is that

the patient was actually in labour six weeks before admission, and that for some reason the lower uterine segment ruptured and the child was expelled into the abdominal cavity, and remained until the time she came into hospital. I think that the former explanation is the more probable. It is very remarkable that both my assistant and myself considered that we were dealing with an ordinary uterus at the time the tents were introduced by him and at the time the fœtus was delivered by me. The patient made a good recovery.

Case IV.—*Cornual Pregnancy.*—T. B., aged 39 years, was admitted to the Maternity Department with a history of an apparent incomplete abortion. She was examined by the assistant on duty. Nothing abnormal was felt, and the uterus was curetted. At the time of admission the patient had been vomiting, and this vomiting continued afterwards, and all that day. The patient complained of pain in the epigastrium, and her pulse was slow. The abdomen was distended, and there was a history of obstinate constipation. Two enemata gave little result, and, as the vomiting became regurgitant and the pulse rose to 120, and no action of the bowels could be obtained, she was transferred to the gynæcological wards as a case of possible intestinal obstruction. The abdomen was then opened, and free blood and clots were found inside. There was a ragged cavity about the size of a shilling at the right cornu of the uterus, and not connected with the uterine cavity. The tubes and ovaries were normal, with the exception of the interstitial part of the right tube. The ragged edges of the cavity were cut away, and it was closed by sutures. It was at first thought that the uterus had been perforated at the time it was curetted, and this seemed extremely probable when the condition described above was first found. However, further examination showed that the cavity at the cornu did not communicate with the uterine cavity, and that further there was a distinct loss of tissue. Microscopic examination did not demonstrate chorionic villi, but still I think there is little doubt that the case was one of interstitial pregnancy.

Case V.—*Abdominal Actinomycosis.*—C. M'C., aged forty, married for fourteen years, four children and three abortions, last pregnancy two years ago, was admitted on the

30th of September. She complained of pains in her left side for about three weeks, and for some time before that she had noticed a swelling in her abdomen. She had been in the hospital in April, 1911, when she was operated on for prolapse, and when the right ovary was removed through the vagina on account of the presence of a cyst. On examination a hard mass was to be felt in the left iliac fossa. It appeared to be very fixed, and could not be reached from the vagina. The uterus was atrophic, and lay high in the pelvis. There was no recurrence of the prolapse. A diagnosis was made of a possible return of malignant ovarian tumour, and an exploratory laparotomy was decided on. On opening the abdomen the mass was found to be formed by the lower end of the omentum, which was inflamed and adherent to the pelvic colon. While this was being freed a little pus exuded from the omentum. Cultures were taken, in which staphylococci, streptococci and bacilli were found. The inflamed omentum was removed, as far as possible. There was a great deal of thickening round the colon, but apparently there was no obstruction. A Mickulicz bag was placed in such a position as to keep the intestines away from the infected colon, and the abdominal wall was closed with the exception of the part through which the bag came out. The bag was removed a couple of days later. The abdominal wall did not heal after the operation, and the thickening in the region of the inflamed colon apparently became larger. There was a thin yellowish discharge from a sinus at the site of the incision. I asked Mr. Heuston to see the patient with me, and he at once suggested that it might be a case of actinomycosis. Accordingly, the discharge was re-examined by Dr. Rowlette with that idea, and club-shaped bodies were found in it. The patient was put on iodide of potassium, and a further operation was decided on. Accordingly, six weeks after the first operation the abdomen was again opened, and this time on the left side, outside the left rectus muscle. The mass was now found to be largely in the abdominal wall, extending down to Poupart's ligament, and it also lay posterior to the sigmoid colon. The intestines were matted together, and contained small abscesses between them. The adhesions were separated as far as possible, as they seemed inclined to cause total obstruction. During this the intestine was perforated at a place where the

wall was infected and had to be closed. The sigmoid was markedly constricted at one point. Nothing further could be done to remove the mass, and so the different points of suppuration were opened up as freely as possible, and the cavities were drained with iodoform gauze. The patient stood the operation well, and subsequently was again placed on full doses of iodide of potassium. She seemed to improve to a certain extent, and then she decided to go home, leaving the hospital in December. I did not anticipate any permanent good result, but rather we all expected that there would eventually be complete obstruction in the region of the sigmoid. I heard, however, some months after she had gone home that she was going along satisfactorily.

In conclusion, I have once again to express my indebtedness to my Assistants, and to the Lady Superintendent and the Nursing Staff, for the most efficient manner in which they have conducted the work of the Hospital.

LITERARY INTELLIGENCE.

THE Year Book of Radiology for 1915 is announced by Messrs. Longmans & Co. as in preparation, edited by Robert Knox, M.D., and James H. Gardiner, F.C.S. The object of the work is to give an account of the more recent advances in our knowledge of radium, *x*-rays, and the allied phenomena, from both the medical and the physical points of view. The volume will comprise a series of authoritative articles by specialists working in radiology, and a directory of qualified medical men practising radiography, *x*-rays, radium and electro-therapeutics, both at home and abroad, also a list of hospitals and institutions where such treatment is carried out. Notices of new books and apparatus, legal information, physical data, hints for the laboratory, and all matters connected with the practice will also be included. The volume is intended to form, as far as possible, a bond of union for those engaged in the practical applications of the various forms of radiation, both at home and abroad.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Occupational Diseases: their Causation, Symptoms, Treatment and Prevention. By W. Gilman Thompson, M.D., Professor of Medicine, Cornell Medical College in New York City; Visiting Physician to Bellevue Hospital. Illustrated. New York and London: D. Appleton & Co. 1914. Large 8vo. Pp. xxvi + 724.

The best way to introduce Professor Gilman Thompson's fine work to our readers is to quote the author's brief "Preface" in full. It runs as follows in a single sentence: "This work, which is the first of its kind to be published in this country [the United States of America], is designed primarily for physicians interested in the subject of the Occupational Diseases of Modern Life, and also as a guide for students of social economics, social service workers, insurance actuaries, and those whose special interests deal with problems of labor legislation, or with workers in the chemical, textile, and many other manufactures or trades in which the health of the workman is closely related to problems of efficiency and humanitarian effort."

Professor Thompson brings to the voluntary task of writing this book a ripe and far-reaching experience of the diseases of occupation or industrial diseases. In the course of many years' connection with the visiting staffs of the New York, Presbyterian, and Bellevue Hospitals, and with the Cornell University Medical College Dispensary, he has had exceptional opportunities for practice among such diseases, particularly those which are represented in the metal manufactures and the industries which give rise to many disorders of the circulatory, respiratory and nervous systems.

In a well-written "Introduction," the author points out that there are few manufactured articles of necessity, comfort, or adornment, which may not, in their production, have been associated with possibilities of industrial poison or disease "hazard." Almost all these diseases of occupation are preventable. In each case the workman has the right of warning against the hazard, the right of such protection as modern scientific knowledge affords. Further, he should have the right of compensation when disabled as a result of the lack of such warning and protection.

"It is easy," writes Professor Thompson, "to estimate the result of bodily injury or award a fixed rate of compensation for the loss of a life, but it is far more difficult to estimate the insidious and progressive effects of occupational disease, and the resulting loss of time or the suffering and misery not only of the workman, but of his family, which such disease entails. On the other hand, it is easy to exaggerate the hazards of particular industries, some of which are very serious but very infrequent, whereas others are not very serious but very frequent."

These are the problems upon which it is the aim of this book to throw light, the author hopes, "without exaggeration and in a spirit of fairness to employer and employee alike."

In addition to full explanation of the ætiology of the diseases of occupation, their pathology, prevention and treatment are discussed at length. Extensive tables of classification are introduced into the text, which has been amplified and elucidated by the free use of illustrations from original, American, and European sources. These illustrations include 118 figures incorporated in the text.

The work is divided into seven Parts, four Appendices, and an Index. The subject-matter of the several parts embraces :—(1) The history of the study, classification, general pathology, and ætiology of occupational diseases ; (2) general remedial measures ; (3) diseases due to irritant substances ; (4) diseases due to harmful environment ; (5) special occupational diseases ; (6) influence of special

conditions on the occupational diseases ; and (7) miscellaneous occupational diseases grouped by industries not included in the foregoing classification.

The appendices include a tabulated list of the principal harmful substances and their effects, a tabular list of important industries in which the workman is subjected to several hazards, a tabular list of the principal industries in which dust constitutes the essential hazard, and the main provisions of existing laws (1914) relative to the reporting of occupational diseases by physicians. The last named table was prepared by Dr. John B. Andrews, Secretary of the American Association for Labor (*sic*) Legislation. It relates solely to the United States, but is well worthy of close study by British statesmen and employers.

The style of this very able and important work may be gathered from the "Definitions" with which Part I. opens.

"The occupational diseases may be defined as maladies due to specific poisons, mechanical irritants, physical and mental strain, or faulty environment, resulting from specific conditions of labor.

"Such maladies may be acute or chronic. They may be the cause of instant death, more or less prolonged invalidism, and incapacity for further work, or may lay the foundation for other diseases of equal or greater hazard.

"They arise from a great variety of poisons, irritating substances, and exposure to unusual physical conditions. They are, for the most part, the outcome of conditions of modern life whereby new combinations of substances are constantly being employed in the arts and manufactures. Also, special uses of nerves and muscles are called for in the operation or control of machinery, and special strains result from lack of variety in work, concentration, and the haste involved in competition or 'speeding up.' In other cases, diseases arise from the general environment of the workman or from the abuse of foods and alcoholic and other beverages in connection with his special employment.

"In addition to the diseases derived primarily from

hazardous occupations are others of importance, notably tuberculosis and pneumonia, which readily assail those whose constitutions have been undermined by exposure to deleterious substances and environment" (pages 1 and 2).

Among those to whom Professor Thompson expresses his acknowledgments for granting the use of illustrations and for help in other ways we observe the name of Dr. Alice Hamilton, a member of the Illinois State Commission on Occupational Diseases—a lady who seems to have done and to be doing splendid work in the State of Illinois in connection with the Hygiene of the White Lead Industry. She wrote on that subject in the *Journal of Industrial and Engineering Chemistry*, June, 1911, and in the tenth number for 1910 of the *Publications of the American Association for Labor Legislation.*

Although the book is thoroughly American in its spirit, phraseology, and spelling, yet adequate justice is done in its pages to the philanthropic efforts of sanitarians in other countries in reference to the great question of industrial diseases and their prevention. Among British authorities on the subject the name of Sir Thomas Oliver, M.D., is especially singled out for laudatory mention.

The work is one which will prove invaluable as a book of reference in Workmen's Compensation cases, and in legal proceedings under the Public Health Acts of Great Britain and Ireland.

A word of praise is due to the Publisher for the splendid setting of the volume—paper, type, printing, and binding are all excellent of their kind.

Medical Gynecology. By Samuel Wyllis Bandler, M.D. Third Edition. Illustrated. Philadelphia and London: W. B. Saunders Company. 1914. 8vo. Pp. 790.

This is the third edition of Dr. Bandler's well-known work. It has been thoroughly revised and brought up to modern knowledge. In particular, the recent work on the internal secretions has received attention, and a good

deal has been added to his writings on the relation of the various glands producing internal secretions to pathological and normal states in women. This subject is a most important one, and Dr. Bandler is not wrong when he devotes some sixty pages to it. Medical gynæcology is an important subject, but it is essential that in works devoted to it, nothing should be done to minimise the importance of gynæcological surgery.

The Newer Physiology in Surgical and General Practice. By A. RENDLE SHORT, M.D., B.S., B.Sc. (Lond.), F.R.C.S. (Eng.), Hunterian Professor, Royal College of Surgeons; Examiner in Physiology for the F.R.C.S.; Hon. Assistant Surgeon, Bristol Royal Infirmary; Senior Demonstrator of Physiology, University of Bristol. Third Edition, revised and enlarged. Bristol: John Wright & Sons, Ltd. 1914. Cr. 8vo. Pp. xi + 256.

THERE is something very fascinating about this book, and especially in connection with the present revised edition, which includes two entirely new chapters—one on the "Vitamines," the other on the "Genital Glands."

Recent clinical researches on beriberi, scurvy and rickets, and on the phenomena of growth, have established the principle that a dietary to maintain health must contain, in addition to the five well-known elements, proteins, carbohydrates, fats, salts, and water, traces of other so far unrecognised chemical substances. These new chemical bodies which appear to be thus needful are called "vitamines." All of them seem to be delicate substances which are lost in the process of keeping.

In opening a discussion on "Diseases due to Deficiencies in Diet" at a meeting of the Therapeutical and Pharmacological Section of the Royal Society of Medicine on October 21, 1913, Dr. F. G. Hopkins, F.R.S., put the matter very clearly. He observed: "The case of beriberi is indeed a very remarkable one. The wide consumption by whole races of a one-sided dietary, the localisation of a specific substance in a grain, an artificial

treatment of that grain exactly adjusted to remove the substance, and the occurrence of prominent symptoms as a result of its removal, all these coincidences were necessary to yield so striking a proof that a disease may arise from a dietetic deficiency."

It is to Dr. Casimir Funk, who, by the way, took part in the same discussion, that we are indebted for the term "vitamines."

Although the theory of vitamine action is still rather hypothetical, yet the question is one of far-reaching significance, and opens a wide and novel field for scientific research and minute clinical investigation.

The second chapter on the Genital Glands is also quite new. It deals with the functions of the ovary and testis respectively, the control of the genital glands by internal secretions, the secretion of milk, the ovum, and the chemical diagnosis of pregnancy. To this last-named subject, Dr. Blair Bell drew attention in a communication made to the Obstetric Section of the Royal Society of Medicine last winter. His paper will be found at page 47 of the number of the Proceedings of the Society for December, 1913.

Dr. Rendle Short points out that not only are the genital glands themselves the source of internal secretions, but there is a good deal of evidence to show that their own activity is dependent upon chemical messengers (hormones), reaching them by the blood-stream, derived from what we call the ductless glands (page 14).

The third chapter on "Surgical Shock" has been largely rewritten. It opens with these graphic sentences: "There were four great barriers which stood across the path of the first pioneers of surgery, and even to this very day make the quack and the bonesetter hesitate to resort to the knife. The first of these was hæmorrhage. The second was pain. This barrier fell down when anæsthetics were introduced. The third was sepsis, a danger which Lord Lister showed us how to triumph over. The last great barrier to be conquered is shock" (page 21).

Dr. Short then goes on to describe and to criticise the exhausted vasomotor centre theory of Crile and Mummery, the acapnia theory of Yandell Henderson, the oligæmia theory of Cobbett and Vale, and the suprarenal exhaustion theory in relation to which last-named he gives an account of an adrenalinoscope which he has devised, as an advance on a method already used by Douglas Cow and also by O. B. Meyer.

Other articles which have undergone a thorough revision are those on Digestion and Absorption, the Pituitary and Pineal Glands, Immediate and Remote Poisoning by Chloroform, the Thyroid and Parathyroid Glands, and the Surgical Physiology of the Spinal Cord.

Enough has been stated to prove how thoroughly Dr. Rendle Short has kept pace with the advance of physiology and of medicine and surgery. There is no book that we can more conscientiously recommend to the student and practitioner than "The Newer Physiology in Surgical and General Practice," and we do so recommend it.

Examination of the Urine and other Clinical Side-Room Methods (late Husband's). By ANDREW FERGUS HEWAT, M.B., Ch.B., M.R.C.P. Ed. Fifth Edition. Edinburgh: E. and S. Livingstone. 1914. Pp. v + 212.

WE are at a loss to know why this should be called a "fifth edition." In his preface Dr. Hewat tells us that "the first part of the book dealing with the urine is the result of a very complete revision, amounting to a rewriting of the fourth edition of Husband's book on 'The Urine in Health and Disease.'"

Quite so—we have not been able to trace a notice of the fourth edition of Dr. Husband's very excellent little book in the pages of this journal, but the third edition was favourably reviewed in the number for November, 1895 (Volume 100, page 412). We find it described as a Lilliputian volume of ninety-five pages. The small neatly finished book now before us contains 212 pages—the section on the urine has been, as Dr. Hewat states, practi-

cally re-written, and more than one-third of the work deals with the examination, for clinical purposes, of the blood, sputum, pus, gastric contents and fæces. It will be seen, therefore, that this is a new publication rather than a fifth edition.

The latter sections are quite new and uncommonly good. More particular mention should be made of the very full account which is given of the investigation of the 'stomach contents," including the physical, chemical and microscopical examination of a "test meal."

The author of this admirable and handy guide to "clinical side-room methods" is a tutor in clinical medicine in the University of Edinburgh, and one of the lecturers in the Edinburgh post-graduate vacation course. He writes, therefore, with authority, as well as with intimate knowledge of the needs of a medical student in learning his profession.

Insanity in Every-day Practice. By E. G. Younger, M.D. Brux., M.R.C.P. Lond., D.P.H., &c.; Senior Physician Finsbury Dispensary; late Senior Assistant Medical Officer London County Asylum, Hanwell, &c. Third Edition. London: Baillière, Tindall & Cox. 1914. Cr. 8vo. Pp. x + 130.

The fact that a third edition has been issued within the limits of a decade is quite convincing proof that this modest litle text-book has successfully filled a vacancy in the demand for semi-popular scientific information on a very important subject. The weaknesses and diseases of the mind—of the organ which presides over the human mechanism, and of which the presence forms the special feature that distinguishes between man and brute—must ever continue to form one of the most interesting subjects of medical study and research, as well as of clinical diagnosis and therapeutic treatment and guardianship. As the author himself modestly informed us at the time of the issue of his first edition of this booklet, his "monograph is an outline chart, and in no sense a detailed reference map." On this ground we are furnished with what we

presume to be a fairly applicable illustration of the sacred aphorism which states that "he that humbleth himself shall be exalted," for Dr. Younger's book has already not merely reached its third English edition, but has secured the almost unique distinction of being translated into the Chinese language. Surely a volume furnished with such credentials has nothing to fear, and, indeed, may be said to have as little to hope, from the most appreciative, or critical, or carping reviewer. So that we can conscientiously content ourselves with saying that the booklet, in our opinion, fully deserves its unique success. The value of the preesnt edition has been enhanced by bringing the section which deals with general paralysis into range with the most recent revelations of science. Influenzal insanity has received due notice, and the provisions of the new Mental Deficiency Act have been clearly summarised—a very important feature from the point of view of the harassed general practitioner. We have no doubt that the success of the booklet will gather strength and velocity as it proceeds. It will thereby take rank among the very many deservedly successful text-books of Medicine and the allied sciences which have issued from the eminent firm of Messrs. Baillière, Tindall & Cox.

A Text-book of the Practice of Medicine. By JAMES M. ANDERS, M.D., Ph.D., LL.D. Eleventh Edition. Philadelphia and London: W. B. Saunders Company. 1913. 8vo. Pp. 1335.

WHEN such a work as this reaches the eleventh edition it has passed the stage of general criticism, and it only remains for us to state that the excellent standard of its predecessors has been well maintained.

The additions to this volume are too numerous even to mention—suffice to say that it would be difficult to name a topic for which some space has not been found, and the entire work has been brought right up to date. In general style it, of course, challenges comparison with a famous text-book which originally came to us from the same country, and it is high praise when we say that

in some respects we give our preference to the book before us.

It is an ideal text-book for the senior student, and will be found of frequent service to the practitioner.

Sclero-Corneal Trephining in the Operative Treatment of Glaucoma. By Robert Henry Elliott, M.D., B.S. Lond., Sc.D., Edin., F.R.C.S. Eng., &c.; Lieut.-Col. I.M.S.; Superintendent of the Government Ophthalmic Hospital, Madras; Professor of Ophthalmology in the Medical College, Madras; Hon. Fellow of the American Academy of Ophthalmology; and Hon. Member of the Minnesota Academy of Ophthalmology, of the Chicago Ophthalmological Society, and of the Detroit Ophthalmological Club. Second Edition. 1914. Revised and enlarged. Pp. xxvi. + 187. Forty-five Illustrations. London: George Pulman & Sons, Ltd., The Ophthalmoscope Press.

We very cordially welcome a second edition of this excellent book, embodying, as it does, the latest views of its author, which have been but little modified from those he expressed in the first edition, notwithstanding the fact that during a period of two months he performed the operation, which bears his name, on 135 eyes in twenty-eight hospials in fourteen of the large towns of the United Staes of America.

There cannot be any doubt, we think, in the minds of ophthalmic surgeons that Elliott's operation affords the easiest and most complete method of obtaining a sub-conjunctival fistula to drain off the aqueous humour and keep the tension of the glaucomatous eye low. There is a most interesting new chapter (Chap. XII.) which is devoted to the expression of the views of ophthalmic surgeons throughout the world concerning this operation. And in Chapter XI. the results of the trephining operations in the Madras clinic for a period of four years are set out so that they may be judged by statistics of the returned cases. Most of the other chapters have been re-cast and added to very largely.

There are two most important practical new points to which Colonel Elliott draws attention. First: the fact that a 2 mm. trephine should be used, because if iris impaction occurs the manipulation of the iris scissors and forceps is much easier than if a 1.5 mm. trephine was made use of. He points out that if no such impaction occurs, the corneal edge of the trephine pressing and cutting a little in adance of the scleral edge, allows one either to complete the whole round of the disc or not, as one wishes. If only half the disc is to be removed, then it is cut with an iris scissors at *right angles* to the surface and not obliquely as was formerly advised.

Second: he has altered his views on the advisability of suturing the flap when operating upon Europeans or Americans. Over here the flap is sutured as a routine. It is now exceptional to use no suture.

The book is worthy of perusal by all ophthalmic surgeons, and certainly has given us (as far as we can judge on present statistics) the best method of warding off the results of that dread disease—glaucoma.

Principles of Pathologic Histology. By FRANK B. MALLORY, M.D.; Associate Professor of Pathology at Harvard Medical School; Pathologist to the Boston City Hospital. New York and London: W. B. Saunders Company. 1914. 8vo. Pp. 677. With 683 original Illustrations, 124 in colours.

THIS book is an entirely new departure in pathology. The author has given a clear and concise account of what he himself sees in miscroscopical preparations from definite lesions. He traces the course of events from the earliest lesion to the latest, and gives his conception of a pathological process from its earliest advent to its latest manifestation. Prof. Mallory has achieved a book of his own, written in his own particular style and giving his own views without any reference to former authors. The reproduction of the micro-photographs are extraordinarily good—most of these have been done by Professor Mallory personally—and a better collection is difficult to imagine.

The book is divided into two parts. Part I. has chapters on inflammation; retrograde processes and the substance associated with them; special injurious agents and the lesions they produce; and tumours. Part II. is devoted to special pathologic histology, including the organs of circulation, respiration, digestion, urinary system, male and female genital system; hæmatopoietic organs, the central nervous system, and the system of locomotion.

In Part I. the outstanding features are Professor Mallory's conception of inflammation, on which he throws many new lights; and the section devoted to tumours. The illustrations in these two sections are particularly fine.

One hundred pages of Part I. are devoted to bacteria and the lesions they produce. There are good accounts of the cardio-vascular system in Part II., and also of the respiratory system. The nervous system is treated in a somewhat cavalier manner. From start to finish there is not a single reference to authorities in the literature or to what anybody else thinks on any subject. This is an epoch-making book which is indispensable in all pathological schools. We urgently recommend it to all students of pathology.

Aids to Medicine. By Bernard Hudson, M.D. (Camb.), M.R.C.P. (Lond.); Swiss Federal Diploma. Second Edition. London: Baillière, Tindall & Cox. 1914. F'cap 8vo. Pp. x + 321.

The second edition of this handy little epitome of medicine has been recently published. It forms one of the "Students' Aids" series, and if its express object as stated in the preface, "to supply the student with a book for revision purposes . . . not in the least degree intended to serve as a substitute for the many excellent text-books on medicine," be fulfilled and not exceeded, we can understand that it may serve a useful purpose. As in its companion volumes, an immense amount of information is compressed into a very small bulk, without the usual wearisome tabulation.

We can recommend the book for a final brush-up the night before an examination, and we would suggest the addition of a short chapter on diseases of the skin.

Psychanalysis : *Its Theory and Practical Application.* By A. A. BRILL, Ph.B., M.D.; Chief of the Clinic of Psychiatry and Clinical Assistant in Neurology, Columbia University Medical School; Chief of the Neurological Department of the Bronx Hospital and Dispensary; &c., &c. Second Edition, thoroughly revised. Philadelphia and London: W. B. Saunders Company. 1914.

THE first edition of this very readable monograph having proved its adaptability to the mental taste of the present English speaking generation, the author very wisely came to the conclusion that it would be "best to add to this new issue new illustrative material of a practical and instructive character"—in fact to provide the mental pabulum which every earnest student and reader always craves for on opening a new text-book. The author's idea of the requisite catering "was effected by the insertion of analysed dreams, interesting cases, and two new chapters," with the indispensable revision and enlargement "by many supplements." And when we learn that the "new material comprises discussion on artificial dreams, the unconscious factor in neurosis, collecting manias, pathologic homosexuality, and fairy tales as a determinant of dreams and neurotic symptoms," we are quite prepared for the present of very varied and even startling items of evidence illustrative of the special views advanced by the famous Viennese professor and his accomplished American champion.

Before proceeding further we must warn the reader that Dr. Brill has taken up a position with regard to Freud's theories and his own evangelisation thereof which may be regarded by some as savouring of scientific toryism; while he attributes to opposing critics the assumption of a somewhat similar attitude, and roundly assures them that

" blind criticism will not stem the progressive advance of the Freudian views." The sun has risen in the East, or in Österreich! He forcibly clinches his statement of this general view by a specimen of the *argumentum ad verecundiam* provided in a quotation from Jones (he might have given us the Christian name—and address, even—as the family referred to is notoriously one of ultra-legionary expansion) : " Assent has been given to the chief of Freud's conclusions by such men of scientific eminence and sane judgment as Professor Bleuler, August Hoch, Jung, Adolph Meyer, and Putman." Can any single reader of present date be rash enough to place his own small name in the opposite scale? We are then cautioned to the effect that : " As psychanalysis deals with mental factors it is only just to expect that those employing it should have a training in psychiatry and neurology." This suggestion, which we must at once admit is a very difficult one to reason out of existence, reminds us very forcibly of the argument that we have seen used by, or attributed to, *inquisitors* in the discussion of matters theological ; and would, if successfully grafted on the statement previously quoted, place the Freudian hypotheses and the evangelists thereof in a position of unquestionable, orthodox infallibility. A statement corresponding to that made by our author : " It must be remembered that the pioneers in this field have been neurologists and psychiatrists first " could pretty readily be adapted to the theological methods of Knipperdolling and George of Leyden, and the uncontradictable assertion that : " to practise psychanalysis without previous training in mental work is as dangerous as practising surgery without a knowledge of anatomy " can hardly be contested by anybody without a congenital defect of the logical centre—although we have known one or two surgeons who were able to make muscular hypertrophy *plus* moral atrophy actually over-compensate the incurable absence of anatomical (and every other form of scientific) knowledge.

The Freudian dream theory is now too well known to require detailed discussion here. As might have been

anticipated, our author gives special prominence—and textual space—to the sexual question and its myriad facets. Those who have not already "made up" the Freudian presentation of such matters will be interested in our author's account of his own, as well as of his master's view of the genesis and evolution of the proverbial mother-in-law. Freud has adopted the Bleuler term "ambivalent" to describe the mutual relation of mother-in-law and son-in law—"made up of both affectionate and hostile feelings." Among the items of argument and statement produced in illustration of this view we meet the statement that: "it is not rare for a man to fall in love with his future mother-in-law before turning his affection to her daughter." We did not know that before, so we experienced the gratifying sensation of being pleasantly pulled up to present date. But Dr. Brill's most interesting volume is dotted with "plums" throughout, and will well repay the time and curiosity of every reader.

The Pocket Formulary for the Treatment of Disease in Children. By LUDWIG FREYBERGER, J.P., M.D. Vienna, M.R.C.P. Lond., M.R.C.S. Eng., Barrister-at-Law. Fourth Edition. London: William Heinemann (Rebman, Ltd.). 1914. Pp. xv + 260.

THIS useful little pocket-book has now reached its fourth edition. The general plan of the book remains the same. The drugs are mentioned in alphabetical order, and a brief summary of its dose, therapeutics, incompatibilities, &c., follows the entry of each drug. There is also a good therapeutic index, as well as hints on dosage, weights, measures, &c.

Short articles on von Pirquet's test and tuberculin treatment have been added to this edition—additions which still further enhance the usefulness of the book.

It is nicely got up with leather binding and rounded corners.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Walter G. Smith, M.D., F.R.C.P.I.
General Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF OBSTETRICS.

President—M. J. Gibson, M.D.
Sectional Secretary—Gibbon FitzGibbon, M.D., F.R.C.P.I.

Friday, April 3, 1914.

The President in the Chair.

Exhibit.—Uterus with Cervical Myomata.

Dr. Bethel Solomons exhibited a uterus with cervical myomata, and said the patient from whom he removed this uterus was thirty-seven years old; married eleven years. The family history was good on her side; suspicious on the husband's. In her first three years of married life she had two healthy babies who are still alive. Two years later she had an eight months' stillborn child; two and half years later a nearly full term stillborn child. In January, 1911, she came under his care. Examination under an anæsthetic then revealed an enlarged uterus with lacerated cervix and rectocele. He performed curettage, tracheorrhaphy, and colpo-perinæorrhaphy. The curettings were found to be glandular endometritis. She enjoyed good health for about six months, when she became pregnant again. Dr. Solomons treated her with potassium iodide and mercury during the pregnancy; but at six months she was delivered of a macerated fœtus. This was examined by Professor O'Sullivan, who reported that there was no trace of the Spirochæte pallida. The patient and her husband decided after this that they would

have no more children. It was impossible to have a Wassermann reaction done. The woman's health was excellent until about a year ago, when menorrhagia and metrorrhagia started. These symptoms became aggravated in the last six months, and severe backache troubled her during the last two months. She consulted Dr. Solomons, and he found a uterus in normal position with two large myomata, one growing from the back and the other from the side of the cervix. It might be asked why he did not perform myomectomy, which appeared from the specimen might have proved easier. He performed hysterectomy for the following reasons:—(1) The age of the patient; (2) her fear of having more macerated babies; (3) the fear of malignant degeneration having commenced. Dr. Adrian Stokes kindly examined the specimen, and reported "endometrium-glandular endometritis. Myoma—simple with early mucoid degeneration. Cervix normal." It was difficult to account for the frequent stillborn babies. Syphilis, endometritis, and tumours are generally regarded as the most common predisposing factors. There was evidently no syphilis. The endometritis might have accounted for the first two, but this was cured and could not have accounted for the last. The tumours were not present until two years after the birth of the first two, and until one year after the birth of the last stillborn child.

The President said that his experience had been that pregnancy in a fibroid uterus went to full term in the majority of cases, and that labour was neither difficult nor dangerous unless obstructed.

Dr. Solomons, replying to the remarks, said on bi-manual examination it was easy to make out the position of the tumours. They felt semi-cystic, and were evidently connected with the uterus. To bi-manual examination the vaginal portion of the cervix was more distinct than shown in the specimen, where the tumour seemed to be incorporated with it. He considered hysterectomy the best operation for the reasons previously stated. The patient had had two stillborn babies before he saw her. When she consulted him first she was examined under anæsthesia, and there was no trace of the myoma. Curetting and the plastic operations stated were done, and she was well for some months, when she had another six months macerated fœtus. As regards the Wassermann reaction, Dr. Stokes, who examined the specimen, suggested that in the absence of

spirochætæ in the macerated fœtus, together with the clinical history, a Wassermann would not have thrown much further light on the subject. In his (Dr. Solomons') opinion the growth of the fibroid started after the birth of the macerated fœtus, and might perhaps be considered an example of the theory held by some authorities as regards causation of myomata that the uterus must have something to do, and if not kept busy as a result of frequent pregnancies it may tend to show its activity in another direction—namely, in the formation of myomata.

Exhibit.—Myoma having undergone Mucoid Degeneration.

Dr. Hastings Tweedy, in showing this specimen, said the patient was sent to him from the country ten months ago, the doctor in attendance stating that during confinement a small lump had been noticed in the uterus. It was a myoma about the size of a closed fist. At the time he (Dr. Tweedy) advised against an operation, as it seemed not to be doing any harm. The patient returned a few months ago, and the tumour then did not appear at all like the one previously felt. It presented an ill-defined, doughy feeling, somewhat like that of matted intestine. The whole abdomen was slightly enlarged, and operation was advised. Difficulty was experienced in entering the abdomen because of adhesions which had formed between the abdominal wall and the tumour. The latter looked extraordinarily malignant. It was apparently not pelvic in origin, and appeared to be growing from the diaphragm. The intestines could not be seen. The hand was finally worked round the tumour, and when air was admitted to its upper portion it came out with comparative ease. Neither intestines nor uterus were apparent, even after its complete removal. For the first twenty-four hours no urine was secreted. It was then secreted in normal amount. The patient suffered on the fourth day from intra-abdominal hæmorrhage, which ceased without further operation, but recurred at the end of fourteen days on the day on which she was permitted out of bed. The hæmorrhage caused a tumour to appear in her right flank, and she began to pass large quantities of bloody urine. It is now three weeks since the operation, and all symptoms are rapidly subsiding. It is difficult to account for the bloody urine in connection with the blood effusion in the abdomen. He concluded the kidney or ureter must have been injured

during the removal of the tumour, which was found to be a myoma undergoing mucoid or colloid degeneration.

Dr. FitzGibbon asked whether the pathological report decided the specimen to be a uterine myoma or an ovarian myoma. He also inquired as to the size of the tumour during the time of the pregnancy, and asked if it increased very much in its latter stages.

Dr. Solomons remarked that he had failed to find any mention of colloid degeneration of uterine myomata in various works on pathology he had consulted. He would like to know if Dr. Tweedy had seen an example of such a degeneration previously.

The President said that the case was particularly interesting from the point of view of the advice that should be given to patients suffering from fibro-myomata. Should not the removal of a fair-sized tumour be at once advised when the patient was not pregnant? He had been impressed by the manner in which the uterus in labour is able to pull tumours out of the way, although it had appeared at first that they may cause obstruction.

Dr. Jellett said he thought there were very few cases of myomata in which the following rule would not be found to apply:—That if the uterus is in a condition to allow a successful pregnancy it is possible to remove the myomata and leave the uterus, and if it is impossible to remove the myomata and leave a uterus it is also impossible for a successful pregnancy and labour to occur. He advises the removal of myomata at once, as he holds that there is then the least risk of complications.

Dr. Tweedy, replying, said he agreed with the Master of the Rotunda Hospital, but did not know that it was always expedient to adopt this plan. One could seldom say beforehand that a myoma could with certainty be removed without sacrificing the uterus, and in the case of a young woman the risk of leaving a tumour was sometimes less than the consequences of its removal.

Congenital Icterus.

Dr. Spencer Sheill read a paper on this subject.

Dr. Tweedy said he had seen a great many cases of jaundice in infants, some of which had terminated fatally, and he had seen a good many *post-mortem* examinations on

these cases, and was surprised at the number of defective ducts found. He was particularly interested in the suggestion that these cases should be subjected to surgical interference. He had not heard it suggested before. Infants bore abdominal section badly, and this was more particularly true of jaundiced infants. He inquired if there were any statistics of successful operations in these infantile illnesses. He mentioned that infants were frequently starved for want of water, and suggested that they did not get enough fluid in the early days after birth. He thought that jaundice arose from want of sufficient fluid, and that this was particularly the case in premature children. He pointed out that children were kept in a hot atmosphere, and required a good deal of water. He wondered if the insufficiency of water would account for the viscosity of the bile.

Dr. FitzGibbon asked whether at the operation on the gall bladder was it possible to make out if it was an obstructive jaundice, also what was the condition of the liver. Was there any enlargement or anything which would suggest a syphilitic condition?

Dr. Spencer Sheill, replying to the remarks, said on examination the liver appeared in every way normal. There was no discolouration or enlargement, and it was not unduly hard or soft. He recognised that everybody was against laparotomy in infants, as they were in nearly 90 per cent. fatal. The literature on the subject was very scanty, but a few men who had operated said that operation gives bad results unless distinct obstruction was found in the duct. In his case he did not think the gall bladder was so distended as to indicate obstruction, and the surgeon reported that the ducts were patent. He considered septic cord cases quite distinct. He was very particular about the prevention of over-clothing of infants, thereby sweating them, and not making up for it by water taken. In replying to a question from Dr. Solomons, he said that the parents refused any interference in the way of a Wassermann, and from the history no information of any value could be elicited.

The Third Stage of Labour.

In the absence of Dr. J. R. Freeland, Dr. E. H. Tweedy read his paper, entitled "The Relation existing between the

Mechanism and the Management of the 3rd Stage of Labour. A report of 2,000 cases from the Rotunda Hospital."

The paper was not discussed.

SECTION OF STATE MEDICINE.

President—T. Percy C. Kirkpatrick, M.D., F.R.C.P.I.
Sectional Secretary—W. A. Winter, M.D., F.R.C.P.I.

Friday, April 17, 1914.

Retrospect of Vital Statistics in Ireland.

The Registrar-General for Ireland read a paper on this subject. [It will be found in the June number of this Journal. Vol. 137. No. 510. Third Series. Page 401.]

Sir John Moore said that in 1901 the Royal College of Physicians arranged a classification of diseases which was doing splendid work, but in 1911 this was replaced by the International Classification. This change he looked upon as a retrograde step. With great difficulty an agreement had been come to to transfer pneumonia from the list of local diseases to that of acute infections, but this has been given up, and pneumonia is now put down in the statistics as a disease of the lungs, which it is not—no more than enteric fever is a disease in the intestines. He noticed that the Registrar-General said that diphtheria was the only acute infection that had increased in prevalence during latter years, but he (Sir John Moore) suggested that previous to 1901 many cases were wrongly designated as croup which should have been included as diphtheria. He agreed with the Registrar-General as to the fate that awaits the population of the British Isles in connection with the outrageous neglect of vaccination, and expressed the hope that the Local Government Board would bring pressure to bear on Boards of Guardians to enforce vaccination.

Sir Charles Cameron said it appeared to him that there was very little enthusiasm shown with regard to statistics. He always considered the study of statistics as extremely interesting. When he was first appointed as Chief Medical Officer of Health in Dublin in 1880 the death-rate was 37.8 per 1,000, and in the following ten years the

average death-rate was reduced to 31.5 per 1,000. The death-rate from the so-called zymotic diseases was 4.4, and in the next ten years it fell to 2.9, while in the following ten years infectious diseases came down to 2.6, and every year since showed a decline. He pointed out that improvements in sanitary conditions could not be expected to produce good results all at once, but they were slowly followed by a decrease in the incidence of infectious disease.

Dr. Delahoyde said he had a knowledge of the conditions in Dublin for a number of years, and there was a very rapid decrease in zymotic diseases. He considered that there had been a great mistake made in regard to vaccination, and thought that pressure should be brought to bear on Boards of Guardians to enforce vaccination.

The President said that one set of figures which struck him was the very considerable falling off in the death-rate from puerperal diseases from the early days until recent times. He referred to an agitation which took place between 1860 and 1870 in connection with the large maternity hospitals, when the number of women who died of puerperal fever was so large that a proposal was made that these hospitals should be closed, and a discussion took place at the Obstetrical Society for a number of nights, when Dr. Evory Kennedy brought forward a communication suggesting that this course should be adopted. It was gratifying to know that the death-rate in this respect had now fallen to .4 per cent. of patients delivered in hospital.

The Registrar-General, replying to the remarks, said it was a question as to whether all other countries would adopt a certain mode of classification, and that Ireland should be left out, and he thought that on the whole, after another ten years it would be found to be an improvement, as nearly all the other countries in Europe had adopted the existing classification. He had little doubt that up to some years ago a number of cases of diphtheria were registered as croup, but now it was the practice to send a query to any medical man who certified croup as a cause of death. He mentioned that it had been found that the greatest incidence of tuberculosis was experienced in cases where the population was most dense. It had been said that it was not the bad housing but the density of population that was the great cause of tuberculosis.

Notification of Tuberculosis in Ireland: its failure and reasons therefor.

Sir John Moore read a paper on the above subject. [It will be found in the May number of this Journal. Vol. 137. Third Series. No. 509. Page 331.]

Sir Charles Cameron said that for statistical purposes it would be desirable that all cases of tuberculosis should be reported. It was a peculiar fact that the Irish people were particularly susceptible to tuberculosis. Statistics in New York as to the tendency to contract the disease showed that amongst Russians it was greatest, and the Irish population came next.

Dr. Rowlette agreed that to a great extent the Act of 1908 had been a failure, and that the cause was attributable far more to the inertia of the Local Government Board than to the local health authorities. He said that the purposes of notification were twofold—(1) To provide trustworthy statistics, and (2) so that preventive measures might be adopted. For the former purpose the system of notification adopted was useless, and he was surprised at the remark made in the Local Government Board Annual Report regarding the number of cases notified falling short of the number of deaths certified from tuberculosis. Bearing in mind the provisions of the Local Government Board Order with regard to notification of tuberculosis, he failed to see what relationship could exist between the two figures. In view of the introduction of the Insurance Act, which was to deal with tuberculosis, it was of extreme importance that trustworthy statistics should be available, but those responsible for carrying out that Act had not a single fact to rely upon as to the number of people suffering from the disease. It was almost certain that in Dublin, where the disease was rife, the sum at the disposal of the Insurance Committee would be inadequate, but up to the present, owing to the difficulties placed in their way, a great many who had been entitled to sanatorium benefit had not claimed it. He suggested that if the local authorities could be persuaded to take up extensive schemes to deal with tuberculosis there would be some hope of improvement. He did not consider that the Insurance Act would produce trustworthy statistics regarding tuberculosis, and it was not certain that the statistics of societies would be available,

and, even if they were, they could not be looked upon as trustworthy.

The President said it occurred to him that there was a difficulty with regard to the question of notification, as in this country people objected to having their diseases notified to anybody, and he doubted whether public health authorities always treated these notifications as strictly private.

Sir John Moore, replying, said notification to societies can never take the place of official notification, either from the point of view of statistics or for the purposes of Preventive Medicine. He thoroughly endorsed the remarks of Dr. Rowlette on the subject.

SECTION OF ANATOMY AND PHYSIOLOGY.

President—B. J. Collingwood, M.D.

Sectional Secretary—A. A. M'Connell, M.B., F.R.C.S.I.

Friday, April 24, 1914.

The President in the Chair.

The Electrometric Method for the Determination of Variations in the Hydrogen Ion Concentration of the Blood.

Professor T. H. Milroy said the concentration of the hydrogen ions in the blood can be most satisfactorily determined by the electrometric method. There are certain difficulties entailed in the method as employed for blood, owing to the fact that the blood is rich in oxygen and in carbonic acid. The former gas leads to a depolarisation of the hydrogen plate, and so the estimation can be made only after complete reduction of the blood, while the latter gas must be prevented from leaving the blood, as the variations in the hydrogen ion concentration are mainly due to changes in the carbonic acid content of the blood.

When the necessary precautions are taken to avoid these fallacies, the method is sufficiently accurate to enable one to determine the variations due to alterations in respiration if these alterations be of a sufficiently marked character.

It may readily be shown that the concentration falls after a period of prolonged pulmonary ventilation and rises again during the period of apnœa. If the period of pulmonary ventilation with air be succeeded by a short period with 10 per cent. carbonic acid in air, then the usual fall in concentration does not occur, and so there is no resultant apnœa.

The fall that is produced after ventilation with rich oxygen-holding mixtures is of the same degree as that observed after inflation with air. To show the degree of the changes in H+ concentration an example may be given.

Before ventilation the hydrogen ion concentration of the blood was $.3715 \times 10^{-7}$ normal, while after fifteen minutes' ventilation with air followed by two minutes, and fifteen seconds with oxygen, the concentration was $.1995 \times 10^{-7}$ N. An apnœic pause of three minutes ten seconds' duration followed the ventilation period, and at the close of this the concentration had risen to $.3548 \times 10^{-7}$N. Ten minutes later, when breathing was again of normal character, the concentration had risen to $.3890 \times 10^{-7}$N.

In certain rare cases ventilation does not produce the usual fall, and when this is the case no apnœic pause is to be observed. The probable reason for this departure from the normal is that although the ventilation has produced a removal of carbonic acid from the blood, the fall in hydrogen ion concentration is prevented by a formation of acid products of incomplete combustion.

The President drew attention to the fact that although the figures showed a subnormal hydrogen ion concentration when breathing began again, nevertheless, he did not think it a necessary conclusion that the sensitivity of the respiratory centre to hydrogen ions was raised, for the breathing at the end of an apnœic pause is also subnormal in character. He referred also to the result obtained by Barcroft in investigating the subject.

Dr. Walter Smith said that the question was of considerable interest to the physician. Up to a few years ago statements made about the clinical reactions of the blood and urine were very unsatisfactory from the clinician's point of view, and the reasons now recognised for this were that the ordinary methods of titration only gave relative readings. He considered the method now introduced was a much more definite one than the older titration methods. He pointed out that the results of the titration process were well known to be markedly influenced by the indicators used. He mentioned that there are now many diseases in which the term "Acidosis" is used, which, if it meant anything, meant an increase or diminution in the hydrogen ion concentration, and if the physiologist could supply a simple method by which

clinical investigators would be able to glean some information, he would look upon it as a distinct advance. He suggested that the condensed hydrogen on the platinum electrode in the blood might possibly disturb the course of the reaction. He inquired if palladium had been tried in place of platinum when carrying out the method.

Professor W. H. Thompson added his appreciation of the method and the results brought forward. He looked on them as a distinct step further in the investigations into the cause of apnœa. It was shown that this apnœa was fundamentally due to reduction in the hydrogen ion concentration, and he would like to know was the effect of the washing out of the CO_2, purely due to the effect on the hydrogen ion concentration, or was it in any sense specific. He took it that alteration in the hydrogen ion concentration by the removal of CO_2, was not the only way that this change took place. He inquired how much blood was required to do an estimation and what were the possibilities of applying the method to clinical work. He also asked as to the effect of the removal of the corpuscles on the result.

Professor Milroy, replying, said he considered it of value to have some other method in addition to a direct carbonic acid estimation. Although the electrodes are kept standing for twenty-four hours, no change took place in the readings once absolute reduction had taken place. Palladium had been used, but the chemical changes around the electrode were found to be very active. With regard to the action of hydrogen chemically on the blood no change had been noticed in the normal blood used, but he could easily understand that fallacies might arise in examination of pathological specimens. As to the quantity of blood required for estimations electrodes could be used in which only 3 c.c. would be necessary and fifteen minutes would carry out the major part of the estimation. The effect of the blood corpuscles or their removal might be taken as constant.

The Effects of Feeding with Glycocyamin on the Excretion of Creatin.

Professor W. H. Thompson said in the case of birds (ducks) the excretion of creatin was increased four to twelve fold by addition of quantities of in or about 1 grm. of glycocyamin to the food. In some cases there was an increase in

the excretion of creatinin (which the author holds to be a normal product of bird metabolism), but this was not constant. The possibilities of error from the formation of glycocyamidin (which also gives the Jaffé reaction) were excluded.

In the dog, feeding with glycocyamin (2 grms. per day) caused an increase of 23 per cent. in the output of creatin. There was no effect on the excretion of creatinin.

The amino acids of the urine were slightly increased; there was no alteration in the output of ammonia.

Guanidin carbonate and glycin—which when heated together yield glycocyamin—were then fed separately. The results were in the case of the bird an increase of 27 per cent., in the case of the dog an increase of 7 per cent. in the output of creatin. The ammonia was slightly increased, but the output of amino acids was unaltered. Creatinin also was unaffected. Owing to guanidin carbonate being somewhat poisonous the quantities given were small—namely, 0.5 grm. of guanidin carbonate and 0.42 grm. of glycin.

The Chemistry of the Jaffé Reaction for Creatinin.

Messrs. H. R. S. Clotworthy and H. Morphy showed that picric acid is not reduced in alkaline solution by creatinin to picramic acid or diaminonitrophenol, as stated by Chapman and others. When alkaline solutions of picramic acid and 2 : 6 — diamino — 4 — nitrophenol are acidified the red colour is immediately discharged. When, however, the Jaffé reaction product is acidified the red colour changes only slowly to a pale yellow colour, the final product being picric acid, as shown by the absorption spectra. The absorption spectra curves of picric acid, picramic acid, 2 : 6 — diamino — 4 — nitrophenol, and the Jaffé reaction product in both acid and alkaline solutions were shown.

The authors conclude that the red colour produced in the Jaffé reaction is due to a complex compound of picric acid, creatinin, and caustic soda, and that this compound on acidification is slowly split up, the original picric acid being reformed.

The investigation was a continuation of work done by Professor W. H. Thompson, in which it was shown that diaminonitrophenol is not formed in the reaction, but that the colour could be accounted for by a mixture of sodium picramate and sodium picrate.

The President congratulated the authors on the results of their work. Attention was directed to the statement frequently made that one of the reasons why Fehling's solution was slightly reduced by normal urine was due to creatinin in the urine. A point in the investigation appeared to him to have been possibly neglected—namely, that only a very small amount of picramic acid might be formed and the resultant consist mainly of picric acid with only a small admixture of the former substance.

Professor W. H. Thompson said, as no one had previously made an attempt to ascertain what proportion of the picric acid was reduced to picramic and what proportion was reduced to diaminonitrophenol he worked at the question last summer. It had been suggested by Jaffé himself that the reaction was due to the reduction of picric to picramic acid, and as the result of his (Professor Thompson's) investigations he came to the conclusion that there was no diaminonitrophenol at all formed (*vide* paper to the Transactions of the International Congress of Medicine). He also came to the conclusion that the colour could be accounted for by the reduction of three-fourths of the picric acid to picramic—that is to say, to a mixture of sodium picramate and sodium picrate. Chapman stated that diaminonitrophenol is formed, and he recognised that it was only possible to settle that point by the spectroscope. Mr. Clotworthy took this up in conjunction with Mr. Morphy, and they have settled that there is absolutely no reduction whatever of the picric acid even to picramic. He failed to understand how Chapman arrived at the conclusion that diaminonitrophenal is formed.

Dr. Walter Smith directed attention to the red precipitate formed by adding picric acid to normal urine, and considered that this was due to the formation of picrate of creatinin.

Professor Milroy considered that there might be a good deal in the fact that the amount of picramic formed was very small, and yet the colour change quite well marked. The picric acid probably attacks the carbonyl group in the creatinin.

Mr. Clotworthy, in replying to the points raised by Professor Collingwood and Professor Milroy, stated that in a preliminary experiment he had treated a solution of picric acid with a known amount of creatinin, and determined, by comparison with a solution of sodium picramate of known strength in a colorimeter, the amount of picramic acid formed,

assuming that the picric acid was really reduced. He then took a corresponding amount of picric acid and treated it with the same quantity of creatinin as before. On the above assumption it would be expected that the whole of the picric acid would be reduced to picramic acid. When the red colour had fully developed the solution was acidified and examined spectroscopically, and it was found that the absorption spectra agreed in every particular (from wave length $\lambda = 2300$ to $\lambda = 5400$) with that of an equivalent amount of picric acid, but was quite different from that of picramic acid.

In reply to Professor W. G. Smith, Mr. Clotworthy said that he had not noticed that red microscopic crystals were formed when normal urine was treated with picric acid.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At a meeting of the College held on July 28, 1914, the following gentlemen, having passed the requisite examinations on March 27, 1914, were admitted Fellows (F.R.C.S. Edin.) :— Robert Bertram Blair, M.B., Ch.B. Univ. Edin, Markinch, Fife ; Joseph Jopling Brown, M.B., B.S. Univ. Durh., Darlington ; Arthur Barrett Cardew, M.R.C.S. Eng., L.R.C.P. Lond., M.B., B S. Univ. Lond., Cheltenham ; Harry Alexander Gibson, M.D., C.M. Queen's Univ., Kingston, Calgary, Alberta, Canada ; Dwarka Prasad Goil, M.B., Ch.B. Univ. Edin., Captain, Indian Medical Service ; William Wells Greer, M.D. Univ. Edin., Edinburgh ; Allan George Hamilton, M.D. Univ. Edin., Liverpool ; Leonard Hirsch, M.R.C.S. Eng., L.R.C.P. Lond., Captain, Indian Medical Service ; John Honeyford, M.D. Univ. Edin., Edinburgh ; Ernest Henry Howard, M.B., Ch.B. Univ. New Zeal., M.R.C.S. Eng., L.R.C.P. Lond., Taumarunui, New Zealand ; Gerald Lewis Little, M.B., Ch.B. Univ. Edin., Captain, Indian Medical Service ; James McClellan, M.D. Univ. Liverpool, Egremont, Cumberland ; John Dugald MacEwen, M.B., Ch.B. Univ. Edin., Edinburgh ; Ernest Muir, M.D. Univ. Edin., Edinburgh ; James Bowman Wilkie, M.B., Ch.B. Univ. Edin., Platten, Kirriemuir.

The following gentlemen obtained the Single Licence of the College (L.R.C.S. Edin.) :—Thomas Jefferson Williams, M.D., Edinburgh, and Vinayak Laxman Sathe, L.M. & S. Bombay, Edinburgh.

SANITARY AND METEOROLOGICAL NOTES.

Vital Statistics.

For four weeks ending Saturday, July 11, 1914.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ended July 11, 1914, in the Dublin Registration Area and the twenty-six principal provincial Urban Districts of Ireland, was 15.9 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,205,280. The deaths registered in each of the four weeks of the period ending on Saturday, July 11, and during the whole of that period in certain of the districts, alphabetically arranged, correspond to the following annual rates per 1,000 :—

County Boroughs, &c.	Week ending				Average Rate for 4 weeks
	June 20	June 27	July 4	July 11	
27 Town Districts	**17.7**	**15.7**	**16.2**	**15.9**	**16.4**
Dublin Reg. Area ...	17.6	15.5	16.3	15.0	16.1
Dublin City	18.1	17.6	16.6	16.0	17.1
Belfast	17.1	17.5	17.0	17.0	17.1
Cork	19.0	12.9	20.4	15.6	17.0
Londonderry	11.4	10.1	14.0	26.6	15.5
Limerick	23.0	12.2	20.3	12.2	16.9
Waterford	30.4	13.3	9.5	17.1	17.6

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain

epidemic diseases registered in the 27 districts during the week ended Saturday, July 11, 1914, were equal to an annual rate of 1.6 per 1,000. Among the 130 deaths from all causes in Belfast were 6 from measles, 5 from scarlet fever, 2 from whooping-cough, 1 from diphtheria, and 5 from diarrhœa and enteritis in children under 2 years. Included in the 23 deaths from all causes in Cork were 1 from whooping-cough and 1 from enteric fever. One of the 6 deaths from all causes in Lurgan was from scarlet fever. Of the 21 deaths recorded for Londonderry, 2 were those of children under 2 years from diarrhœa and enteritis.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin, as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 406,000, that of the city being 310,467, Rathmines 39,155, Pembroke 30,240, Blackrock 9,197, and Kingstown 16,941.

In the Dublin Registration Area the births registered during the week ended July 11 amounted to 214—111 boys and 103 girls, and the deaths to 128—64 males and 64 females.

DEATHS.

The deaths registered, omitting the deaths (numbering 11) of persons admitted into public institutions from localities outside the Area, represent an annual rate of mortality of 15.0 per 1,000 of the population. During the twenty-eight weeks ending with Saturday, July 11, the death-rate averaged 22.5, and was 0.1 below the mean rate for the corresponding portions of the ten years, 1904–1913. The total deaths registered, numbering 128, represent an annual rate of 16.4 per 1,000. The annual rate for the past twenty-eight weeks was 24.0 per 1,000, and the average annual rate for the corresponding period of the past ten years was 23.8 per 1,000 of the mean population for all deaths registered.

The deaths (128) included 2 from enteric fever, 2 from whooping-cough, 4 from measles, and 4 from diarrhœa and enteritis in children under 2 years. In each of the three

State of Infectious Disease in the Dublin Registration Area, and in Belfast, Cork, Londonderry, Limerick, and Waterford.

The following Table shows the Number of Cases of Infectious Diseases notified, under the "Infectious Diseases (Notification) Act, 1889," and the "Tuberculosis Prevention (Ireland) Act, 1908," in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the Cities of Belfast, Cork, Londonderry, Limerick, and Waterford, during the week ended July 11, 1914, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

Cities and Urban Districts	Week ending	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Pyrexia (origin uncertain) *a*	Enteric or Typhoid Fever	Erysipelas	Puerperal Fever	Whooping-cough	Cerebro-spinal Fever	Acute Polio-myelitis	Pulmonary Tuberculosis	Total
City of Dublin	June 20	*	*	15	-	-	6	-	-	4	2	-	*	-	-	44	71
	June 27	*	*	8	1	-	13	-	-	1	2	-	*	-	-	28	53
	July 4	*	*	2	-	-	3	-	-	3	2	-	*	-	-	40	51
	July 11	*	*	8	-	-	5	-	-	3	4	-	*	-	-	31	51
Rathmines and Rathgar Urban District	June 20	*	*	3	-	-	2	-	-	-	-	-	*	*	*	*	5
	June 27	*	*	-	-	-	2	-	-	-	-	-	*	*	*	*	2
	July 4	*	*	-	-	-	1	-	-	-	-	-	*	*	*	*	1
	July 11	*	*	-	-	-	3	-	-	2	2	-	*	*	*	*	7
Pembroke Urban District	June 20	5	-	1	-	-	1	-	-	1	-	-	-	*	*	2	9
	June 27	1	-	-	-	-	3	-	-	-	-	-	-	*	*	-	4
	July 4	-	-	3	-	-	3	-	-	-	-	-	-	*	*	3	9
	July 11	5	-	1	-	-	2	-	-	-	-	-	-	*	*	-	8
Blackrock Urban District	June 20	9	*	1	-	-	-	-	-	-	-	-	*	-	*	*	10
	June 27	2	*	-	-	-	-	-	-	-	-	-	*	-	*	*	2
	July 4	1	*	-	-	-	1	-	-	-	-	-	*	-	*	*	2
	July 11	-	*	-	-	-	-	-	-	-	-	-	*	-	*	*	-
Kingstown Urban District	June 20	*	*	-	-	-	2	-	-	-	-	-	*	*	*	-	2
	June 27	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-	-
	July 4	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-	-
	July 11	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-	-
City of Belfast	June 20	*	*	43	1	-	6	-	-	1	6	-	*	-	-	7	64
	June 27	*	*	28	-	-	3	-	-	2	2	-	*	-	-	-	35
	July 4	*	*	28	-	-	6	-	-	1	-	1	*	-	-	9	45
	July 11	*	*	20	1	-	6	-	-	-	4	-	*	-	-	2	33
City of Cork	June 20	5	*	3	-	-	1	-	1	-	-	2	*	*	*	*	12*b*
	June 27	9	*	2	-	-	-	1	-	-	-	-	*	*	*	*	12
	July 4	3	*	4	-	-	-	1	2	1	1	-	*	*	*	*	12*c*
	July 11	1	*	2	-	-	-	-	-	-	1	-	*	*	*	*	4*d*
City of Londonderry	June 20	*	*	-	-	-	1	-	-	1	-	-	*	*	*	*	2
	June 27	*	*	4	-	-	-	-	-	-	-	-	*	*	*	*	4
	July 4	*	*	-	-	-	-	-	-	-	-	-	*	*	*	*	-
	July 11	*	*	-	-	-	2	-	-	1	-	-	*	*	*	*	3
City of Limerick	June 20	*	*	5	-	-	-	-	-	2	-	-	*	-	*	*	7
	June 27	*	*	1	-	-	-	-	-	1	-	-	*	-	*	*	2
	July 4	*	*	1	-	-	-	-	-	-	-	-	*	-	*	*	1
	July 11	*	*	-	-	-	-	-	-	-	-	-	*	-	*	*	-
City of Waterford	June 20	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-	-
	June 27	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-	-
	July 4	*	*	-	-	-	-	-	-	-	-	-	*	*	*	2	2
	July 11	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-	-

a Continued Fever *b* Not including one case of whooping-cough. *c* Not including 4 cases of choleraic diarrhœa. *d* Not including 9 cases of choleraic diarrhœa.

preceding weeks deaths from whooping-cough had been 0, 0, and 1 ; from enteric fever, 1, 1, and 1 ; from measles, 5, 3, and 2 ; and from diarrhœa and enteritis in children under 2 years, 7, 4, and 4 respectively.

Of 23 deaths from tuberculosis (all forms), 18 were attributed to pulmonary tuberculosis, 2 to tubercular meningitis, and 3 to other forms of the disease. In each of the three preceding weeks, deaths from all forms of tuberculosis had been 18, 24, and 30.

There were 8 deaths from cancer, or malignant disease.

There were 3 deaths of infants from premature birth, 1 death from convulsions, and 1 from congenital debility.

The deaths from pneumonia included 6 from broncho-pneumonia, and 4 from pneumonia (type not distinguished).

Eleven deaths were caused by organic diseases of the heart, and 4 were assigned to acute endocarditis. There were 9 deaths from bronchitis.

There were 3 accidental deaths, including 1 death caused by drowning, and there was 1 suicidal death.

In 2 instances the cause of death was " uncertified," there having been no medical attendant during the last illness ; these were deaths of infants under one year old.

Thirty-one of the persons whose deaths were registered during the week were under 5 years of age (16 being infants under 1 year old, of whom 5 were under 1 month old), and 35 were aged 65 years and upwards, including 26 persons aged 70 and upwards. Among the latter were 13 aged 75 years and upwards, of whom one (a female) was stated to have been aged 90 years.

Cases of Infectious Diseases under Treatment in Dublin Hospitals.

During the week ended July 11, 1914, 5 cases of enteric fever were admitted to hospital, 2 were discharged, there was 1 death, and 24 cases remained under treatment in hospital at the close of the week, the respective numbers in hospital at the close of the three preceding weeks having been 28, 24, and 22.

Fifteen cases of measles were admitted to hospital, 11 cases were discharged, there was 1 death, and 55 cases remained

under treatment at the close of the week. At the end of the three preceding weeks such cases had been 64, 50, and 52 respectively.

Two cases of typhus remained under treatment in hospital at the close of the week.

Ten cases of scarlet fever were admitted to hospital, 23 were discharged, there was 1 death, and 94 cases remained under treatment at the close of the week. This number is exclusive of 21 patients under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital. At the close of the three preceding weeks the cases in hospital had been 121, 108, and 108 respectively.

Fifteen cases of diphtheria were admitted to hospital, and 11 were discharged. The cases in hospital, which at the close of the three preceding weeks had numbered 41, 42, and 36, respectively, were 40 at the close of the week under review.

In addition to the above-named diseases, 7 cases of pneumonia were admitted to hospital, 3 were discharged, there was 1 death, and 19 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, July 11, in 97 large English towns (including London, in which the rate was 10.6) was equal to an average annual death-rate of 11.5 per 1,000 persons living. The average rate for 16 principal towns of Scotland was 13.6 per 1,000, the rate for Glasgow being 14.1, and that for Edinburgh 15.7.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by A. Maxwell Williamson, M.D., B.Sc., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended July 11. From this report it appears that of a total of 82 cases notified, 48 were of scarlet fever, 10 of phthisis, 19 of diphtheria, 4 of erysipelas, and 1 of puerperal fever. Among the 521 cases of infectious diseases in hospital at the close of the week were 236 cases of scarlet fever, 190 of phthisis, 64 of diphtheria, 5 of measles, 3 of enteric fever, 2 of purperal fever, 5 of chicken-pox, and 8 of erysipelas.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of July, 1914.

Mean Height of Barometer,	29.856 inches.
Maximal Height of Barometer (9th, at 9 p.m.),	30.196 ,,
Minimal Height of Barometer (20th, at 2 a.m.),	29.570 ,,
Mean Dry-bulb Temperature,	58.8°.
Mean Wet-bulb Temperature,	55.9°.
Mean Dew-point Temperature,	53.3°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.412 inch.
Mean Humidity,	82.7 per cent.
Highest Temperature in Shade (on 21st),	73.8°.
Lowest Temperature in Shade (on 3rd),	48.3°.
Lowest Temperature on Grass (Radiation) (3rd).	46.6°.
Mean Amount of Cloud,	71.4 per cent.
Rainfall (on 20 days),	2.234 inches.
Greatest Daily Rainfall (on 4th),	.689 inch.
General Directions of Wind,	N.W., W., S.E.

Remarks.

A changeable, cloudy, showery, but withal a very favourable month. The first half yielded some heavy but infrequent rainfalls—.689 inch on the night of the 4th, and .688 inch on the 8th from midnight to midnight, 1.377 inches or 61.7 per cent. of the rainfall of the whole month. From the 13th to the end, rain fell on 16 out of 19 days, but only to the amount of .849 inch. In the earlier period shallow atmospheric depressions either lay on the ocean to the westward of Ireland, or spread in over the British Isles. On the 9th a system of relatively and uniformly high pressure developed over North-western Europe, and led to a few days of fine summerlike weather. On Sunday, the 12th, severe thunderstorms visited many parts of England. Shortly afterwards a shallow depression appeared off the west of Ireland, and the weather broke in this country. At first the winds were S.W., but as the depression drifted slowly across the British Isles to the North Sea, the wind veered to N.W., and freshened to a strong breeze or even a gale in the North of Ireland, with clouds, showers, and low temperatures. It was not until the 31st that the

approach from the Atlantic of a new depression caused the wind to shift to S.E. and S., clouds and rain attending the change.

The month opened with great heat in England. On the 1st the screened thermometer rose to 85° or a little higher in several places, 89° was recorded at Kew Observatory, Richmond Park, 90° at South Kensington, 92° at the Royal Observatory, Greenwich, and 94° at Camden Square, London, N.W. This heat-wave soon passed, for the maximum on the 3rd exceeded 70° only at Greenwich.

A notable feature in the month also was a spell of tropical heat felt at Haparanda, on the Gulf of Bothnia (lat. 65° 58′ N.), from the 4th to the 12th inclusive, the thermometer rising to 90° at that Arctic Circle station on the 5th.

In Dublin the arithmetical mean temperature (60.0°) was .5° below the average of the 35 years, 1871–1905 (60.5°); the mean dry-bulb readings at 9 a.m. and 9 p.m. were 58.8°. In the forty-nine years ending with 1914, July was coldest in 1879 ("the cold year") (M. T. = 57.2°). It was warmest in 1905 (M. T. = 63.8°); and in 1887 (M. T. = 63.7°). In 1913 the M. T. was 60.5°.

The mean height of the barometer was 29.856 inches, or .059 inch below the corrected average value for July—namely, 29.915 inches. The mercury rose to 30.196 inches at 9 p.m. of the 9th, and fell to 29.570 inches at 2 a.m. of the 20th. The observed range of atmospheric pressure was, therefore .626 inch.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 58.8°, or 1.4° above the value for June, 1914. Using the formula *Mean Temp* = *Min.* + (*Max.* — *Min.*) × .465, the value was 59.6°, or 0 5 below the average mean temperature for July, calculated in the same way, in the thirty-five years, 1871–1905, inclusive (60.1°). The arithmetical mean of the maximal and minimal readings was 60.0°, compared with a thirty-five years' average of 60.5°. On the 21st the thermometer in the screen rose to 73.8°—wind, N.E.; on the 3rd the screened thermometer fell to 48.3°—wind, N.W. The minimum on the grass was 46.6°, also on the 3rd.

The rainfall was 2.234 inches, distributed over 20 days. The average rainfall for July in the thirty-five years 1871–1905, inclusive, was 2.680 inches, and the average number of rain-

days was 17. The rainfall, therefore, was less than the average, whereas the rain-days were 3 above the average. In 1880 the rainfall in July was very large—6.087 inches on 24 days ; in 1896, also, 5.474 inches fell on 18 days. On the other hand, in 1870, only .539 inch was measured on 8 days ; in 1869 the fall was only .739 inch on 9 days ; and in 1868 .741 inch fell on but 5 days. In 1912, 3.055 inches fell on 17 days, and in 1913 only .634 inch on 13 days.

High winds were noted in Dublin on 7 days. Temperature reached or exceeded 70° in the screen on only 3 days, compared with 5 days in 1913, 4 days in 1912, 21 days in 1911, 4 days in 1910, 3 days in 1909, 9 days in 1908 and 1907, 10 in 1906, 17 in 1905, and 10 in 1904. The thermometer never failed to reach 60°. In 1888 the maximum for July was only 68.7°.

Thunder occurred on the 8th, 18th, and 21st ; lightning was seen on the 12th and 21st. There was a lunar halo on the 10th.

The rainfall in Dublin during the seven months ending July 31st amounted to 11.244 inches on 114 days, compared with 15.731 inches on 117 days in 1913, 16.811 inches on 27 days in 1912, 10.723 inches on 94 days in 1911, 21.032 inches on 127 days in 1910, 15.377 inches on 106 days in 1909, 13.809 inches on 120 days in 1908, 14.358 inches on 127 days in 1907, 13.664 inches on 122 days in 1906, 11.022 inches on 109 days in 1905, 13.905 inches on 117 days in 1904, 19.072 inches on 131 days in 1903, 15.507 inches on 115 days in 1902, 11.432 inches on 93 days in 1901, only 7.935 inches on 80 days in 1887, and a thirty-five years' (1871–1905) average of 14.710 inches on 113 days.

At the Normal Climatological Station in Trinity College, Dublin, the observer, Mr. Sidney A. Clark, reports that the mean height of the barometer was 29.855 inches, the range of atmospheric pressure being from 30.17 inches at 9 a.m. of the 10th to 29.60 inches at 9 a.m. of the 2nd. The mean value of the readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 59.7°. The arithmetical mean of the daily maximal and minimal temperatures was 59.4°, the mean maximum being 66.3°, and the mean minimum 52.4°. The screened thermometers rose to 75.7° on the 12th, and fell to 45.5° on the

3rd. On the 4th the grass minimum was 41.0°. Rain fell on 17 days to the amount of 2.273 inches, the greatest fall in 24 hours being .660 inch on the 4th. The duration of bright sunshine, according to the Campbell-Stokes recorder, was 157.7 hours, of which 12.1 hours occurred on the 30th. The mean daily duration was 5.1 hours. In July, 1904, there were 201 hours of bright sunshine: in 1905, 162.2 hours: in 1906, 184.8 hours: in 1907, 178.1 hours: in 1908, 174.3 hours: in 1909, 139.8 hours: in 1910, 205.0 hours: in 1911, 221.8 hours: in 1912, 153.0 hours, and in 1913, 157.2 hours. The mean sub-soil temperatures at 9 a.m. were—at 1 ft., 62.0°: at 4 ft., 58.1°.

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Captain Edward Taylor, D.L., recorded a rainfall of 2.56 inches on 14 days at Ardgillan, Balbriggan, Co. Dublin. This measurement was .07 inch below the average, and the rain-days were 1 in defect. The largest rainfall in 24 hours was .51 inch on the 31st. The July rainfall at Ardgillan in recent years has ranged from 7.03 inches on 18 days in 1895 to .52 inch on 5 days in 1898. Since January 1, 1914, 12.33 inches of rain have fallen at Ardgillan on 99 days, the precipitation being 2.98 inches under the average and the rain-days 8 in defect. The shade temperature in July ranged from 75.7° on the 21st to 45.7° on the 3rd.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, Co. Dublin, was 2.305 inches on 15 days. The largest daily fall was .425 inch on the 4th.

At Stirling, Clonee, Co. Meath (231 feet above sea-level), Mr. J. Pilkington measured a total rainfall of 3.12 inches on 16 days, the largest measurement on any one day being .64 inch on the 21st. This fall occurred in half-an-hour at 6 p.m. in a thunder shower. From January 1 to July 31, the rainfall at Clonee amounted to 13.40 inches on 107 days.

At the Ordnance Survey Office, Phœnix Park, rain fell on 19 days to the amount of 2.345 inches, the greatest rainfall in 24 hours being .420 inch on the 13th. The total duration of bright sunshine was 178.8 hours, the greatest daily sunshine being 12.5 hours on the 3rd. The thermometer rose to 76.5° in the screen on the 3rd, and fell to 40.9° on the 4th, when the grass minimum was 35.7°.

Miss C. Violet Kirkpatrick reports a rainfall of 2.22 inches

on 15 days at Cheeverstown Convalescent Home, Clondalkin, Co. Dublin. The heaviest fall in 24 hours was .34 inch on the 25th.

Mr Harold Fayle forwards the following report from 19 Highfield Road, Rathgar, Dublin :—

Mean corrected height of Barometer,	29.87 inches
Highest corrected reading on the 10th at 9 a.m.,	30.20 ,,
Lowest corrected reading on the 2nd at 9 a.m.,	29.61 ,,
Mean Dry Bulb Temperature,	58.9°
Mean Wet Bulb Temperature,	56.1°.
Mean Vapour Pressure,	.411 inch.
Mean Humidity,	83 per cent.
Mean Maximal Temperature,	66.6°.
Mean Minimal Temperature,	52.7°.
Arithmetical Mean,	59.6°.
Absolute Maximal Temperature on the 21st,	77°.
Absolute Minimal Temperature on the 3rd and 4th,	47°.
Lowest Temperature on the Grass on the 4th,	41°.
Highest Temperature in the Sun on the 18th,	143°.
Rainfall, of 18 days,	2.00 inches.
Greatest Daily Rainfall on the 4th,	.39 inch.
Mean Amount of Cloud,	81 per cent.
General Directions of Wind,	N.W., W.

Dr. Arthur S. Goff reports that at Belfort House, Dundrum, Co. Dublin, the rainfall was 2.49 inches on 21 days. The maximal fall in 24 hours was .59 inch, measured on the 7th. The mean temperature was 61.0°, the range being from 80° on the 21st to 48° on the 3rd, 26th, and 27th.

The rainfall recorded by Mr. George B. Edmondson at Manor Mill Lodge, Dundrum, was 2.20 inches on 19 days. Of this quantity, .41 inch fell on the 4th. The mean temperature was 60.5°, the thermometer rising to 76° on the 21st, and falling to 47° on the 26th and 27th.

At Marino, Killiney, Co. Dublin, Mr. W. J. M'Cabe, observer for the Right Hon. Laurence Waldron, D.L., registered a rainfall of 2.88 inches on 15 days. The heaviest fall in 24 hours was .95 inch in the thunderstorm of the 8th. The average rainfall in July in the twenty-four years, 1885–1908, at Killiney (Cloneevin), was 2.408 inches on 15 days.

Dr. A. J. Blake, Resident Medical Superintendent of the Sanatorium of the Dublin Joint Hospital Board, at Crooksling, Brittas, Co. Dublin, recorded a rainfall of 2.14 inches on 18 days. The heaviest fall in 24 hours occurred on the 3rd and measured .33 inch in the gauge.

Dr. John H. M. Armstrong, M.B., and Miss Nora G. Moore report that the rainfall at Coolagad, Greystones, Co. Wicklow, was 3.60 inches on 17 days, the maximal fall on any one day being .95 inch on the 4th. Since January 1, 1914, the rainfall at that station equals 17.17 inches on 111 days. At 7 15 p.m. of the 27th a panoramic view of the Welsh Hills was seen from Coolagad. Lightning was seen on the eastern horizon at 10 p.m. of the 11th. There were sea fogs on the 1st, 12th and 20th.

The rainfall return from Auburn, Greystones, Co. Wicklow, is defective owing to the absence of the observer. No readings were taken prior to the 19th, but from that date to the close of the month Mr. Cecil Ross Todd measured .71 inch on 7 out of 13 days, .32 inch being recorded on the 31st.

At the Royal National Hospital for Consumption for Ireland, Newcastle, Co. Wicklow, Dr. Charles Denys Hanan, M.D., Resident Medical Superintendent, reports a rainfall of 2.47 inches on 18 days, the greatest daily rainfall being .61 inch on the 4th. The screened thermometers rose to 74° on the 21st, and fell to 47° on the 6th. The mean maximal temperature was 64.5°, the mean minimum was 52.9 and the mean temperature was 58.7°.

At the Rectory, Dunmanway, Co. Cork, the Rev. Arthur Wilson, M.A., recorded a rainfall of 4.43 inches on 22 days. The rainfall was 1.42 inches more than the average for July (3.01 inches). The heaviest falls in 24 hours were .95 inch on the 30th, .72 inch on the 3rd, and .60 inch on the 18th. The weather was very cool, windy and showery except from the 20th to the 29th, when it was very fine and bright, with north-westerly winds. Most of the heavy rainfall took place at night. It was very wet on the night of the 30th. Thunder and lightning occurred on the 10th. The rainfall at Dunmanway for the 7 completed months of 1914 amounts to 35.81 inches, compared with an average of 31.43 inches. It was therefore 4.38 inches in excess.

THE PANAMA-PACIFIC INTERNATIONAL EXPOSITION AT SAN FRANCISCO IN 1915.

THE Panama Canal, as it stands to-day completed, is as much a monument to the sciences of Medicine and Sanitation as it is to the science of Engineering. It is therefore fitting that the Panama-Pacific International Exposition, which opens its gates on February 20, 1915, to celebrate with the whole world the completion of the canal, should accord signal honours to Medicine. The Medical Corps, under Lieutenant-Colonel W. C. Gorgas, made the building of the canal possible. The Engineering Corps, headed by Colonel George W. Goethals, completed the achievement.

Among the 227 congresses and conventions which will meet at the Exposition, the International Congress of Engineers, numbering 25,000 delegates from forty different world nations, presided over by Colonel Goethals, and the American Academy of Medicine, the National Hygiene Commission and the International Association of Nurses, with 6,000 delegates, will occupy commanding positions.

General Loynaz Castillo, Cuba Commissioner to the Exposition, announces that his Government in 1915 will show how the experience of the United States Army in Cuba made possible the Panama Canal. Model hospital wards, as they are conducted in the tropics, will be an important part of the exhibit in the Social Economy Section. A mosquito as large as an ostrich will be in the Cuban exhibit as a part of a demonstration showing the dangers of the mosquito. The Cuban exhibit is to be prepared by Philip Rauer, probably the world's greatest manufacturer of wax and glass models and a scientist of great learning. Cuba will spend more than a quarter of a million dollars on her exhibit.

Argentina, Japan, France, Germany, the Philippines and thirty other countries will be well represented by health exhibits. The most important of the welfare, civic, and health by-exhibits from the Urban Exposition which is now open at Lyons, France, will be brought to San Francisco. Also the British exhibits which were shown at Ghent in 1913 will be brought in their entirety.

In addition to the governmental and state exhibits there will be unexampled health and human welfare displays assembled by such organisations as the American Steel Corporation, which will spend $100,000 ; the General Electric Company, which will show appliances for conserving the health of factory employees ; the Rockefeller Foundation, which will concentrate on the measures to eradicate the hook-worm ; the Russel Sage Foundation, Carnegie Institutions and the Social Survey.

Included in the list of 226 national and international congresses and conventions of learned and scientific, industrial, ethical and other bodies that have voted to hold the sessions at the Panama-Pacific International Exposition are many that directly have to do with public health and hygiene. The American Academy of Medicine, the National Commission of Mental Hygiene, five organisations of eye, ear, nose and throat specialists, various societies for the elimination of tuberculosis, cancer and other diseases will be a few of the many that are to meet in San Francisco during the coming year. The Panama-Pacific Dental Congress will bring more than 3,000 delegates with a clinic of more than thirty chairs. The Red Cross Association of America, the American Nurses' Association, and the National League of Nurse Education will meet with their thousands of delegates, as well as the International Congress of Nurses and the National Organisation of Public Health Nurses. The National Organisation of Public Health Nurses will bring an elaborate series of exhibits, including recent hospital equipment, model wards, a Florence Nightingale exhibit and a model exhibit and a model hospital mortuary as developed in Europe. Nurses from fifteen nations will be present to give the world the benefit of their ideas in the respective countries.

One of the interesting features of the Exposition to surgeons and medical men and women is the model emergency hospital, which has been in operation for many weeks and which constitutes one of the many working exhibits. It is in charge of Dr. R. M. Woodward, Surgeon in Charge of the United States Marine Hospital in San Francisco. The hospital includes model automobile ambulances, a sterilising room and *x*-ray room, a library, operating chairs, surgical instruments and equipment and a drug room. It is in the service buildings of the Exposition, at the entrance to the grounds.

P. Blakeston & Son, Meinecke & Co., D. Appleton & Co., Schiedel Western *x*-ray Company, Bausch & Lomb Optical Company, W. B. Saunders Company, the American Steriliser Company and the Victor Electric Company have all donated their wares for the use of the hospital.

In the Palace of Liberal Arts, Medicine and Surgery will be treated in thirteen separate classes, instruments for work in anatomy, histology and bacteriology, apparatus for sterilising instruments and wound dressing appliances will be shown. Other features of the exhibits in this line will be: instruments for special and general medical research; instruments and apparatus for therapeutics, surgery and dentistry; *x*-ray apparatus; electric sterilisers and ozonisers; appliances for the use of the infirm, of invalids and of lunatics; apparatus for hernia; instruments and apparatus used in the practice of dentistry; chests and cases of instruments and medicine for the use of surgeons of the army and navy; appliances for rendering aid in case of accidents and for rendering aid to the wounded on the battle field; ambulance service; appliances for rendering aid to persons apparently drowned or asphyxiated; instruments and appliances for veterinary surgery; and the equipment used by druggists and pharmacists. The Palace of Liberal Arts which is to house these exhibits is already practically completed at a cost of $344,180 and the central architectural plan of the 635 acres now presents to the visitors more than a hint of the wonderful dream that architects, artists and designers saw a little more than a year ago when the work began.

TIDMAN'S SEA SALT.

Messrs. Tidman & Son, Ltd., announce that there has been no increase in price for their famous Sea Salt, or Tidman's Table Salt. They are keeping their entire staff employed at full wages, and hope for the continued patronage of their customers.

LITERARY NOTE.

The fourth edition of Sir Alfred Pearce Gould's "Elements of Surgical Diagnosis," revised by the Author, with the assistance of Mr. Eric Pearce Gould, is announced for early publication by Messrs. Cassell & Company.

NATIONAL RELIEF FUND.

THE terrible war in which Great Britain and Ireland have been compelled to take part through regard for the national honour and in defence of the rights and liberties of the British Empire must necessarily entail much suffering not only on our brave sailors and soldiers but also on their wives and children. In a noble and patriotic effort to lessen the effects of that suffering, H. R. H. The Prince of Wales has started a National Relief Fund. Every citizen should esteem it not only a duty but a privilege to aid this fund to the best of his or her ability. The Prince of Wales is the Treasurer of the Fund, and the Joint Secretaries are C. Arthur Pearson, Hedley F. Le Bas, and Sir Frederick Ponsonby, K.C.V.O., C.B. All remittances, with the subjoined coupon, should be addressed to H. R. H. The Prince of Wales, Buckingham Palace, London, S.W. These and other letters to the Fund need not be stamped.

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THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

OCTOBER 1, 1914.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XI.—*Myasthenia Gravis.* A Short Account of the Disease, with Notes on Three Cases.[a] By R. OSBORN SMYTH, B.A., M.D., B.Ch., B.A.O., Univ. Dubl.

ALTHOUGH the rarity of myasthenia gravis does not seem to be so great as was formerly supposed, it is a disease which has created but little attention in this country up to a comparatively recent period, and even now it receives little or no mention in some well-known works on Medicine.

Historically, the first mention of it in England was a paper by Wilks, in the *Guy's Hospital Gazette*, published in the year 1877. He described it as a case of bulbar paralysis in which no anatomical changes were found.

In the following year Erb also described a case, but these papers do not seem to have attracted much attention at the time.

Ten years later, in 1887, two cases were published, and in 1890-91 some five cases were brought to light. And it was not until then that it received a definite clinical entity.

[a] A Thesis read for the Degree of Doctor of Medicine in the University of Dublin, June, 1914.

Since then, however, much has been written on it, especially on the Continent.

It is characterised by a weakness of various muscles, which quickly become exhausted by use, but soon again regain their power after a short period of rest. It is unaccompanied by wasting in the great majority of cases, and shows a definite electrical reaction. The paresis varies in degree, not only in different cases, but is seen to alter in the same case from time to time.

It tends to affect the eyelids, orbit, mouth, tongue and palate—that is to say, those muscles which are most constantly in use. The muscles of the eye are those which most commonly attract the patient's attention at first, and they frequently consult a medical man as to their inability to hold the eye open, especially in the evening. The ptosis may be unilateral or bilateral, and is generally more marked on one side than on the other. It is accompanied by paresis of the orbicularis and occipito-frontalis muscles, so that the eye cannot be kept closed against pressure, and raising of the eyebrows is out of the question in order to compensate for the drooping of the lids. This frequently gives rise to the patient keeping the head tilted backwards in order to see in front of him.

Strabismus and diplopia are common, due usually to weakness of the superior and external ocular muscles, causing the patients to complain that they are unable to read, as, after a few lines, the letters become blurred and run into one another. The movement of the eyes in an upward and outward direction is limited, and may cease altogether from fatigue. Nystagmoid movements are occasionally seen. The sphincter iridis is not involved, reflex and accommodatory movements being normal.

Regarding the muscles of the cheeks and jaws, difficulty of mastication is commonly seen. Following the general rule of the disease, the patient starts mastication well, but soon begins to lose the power, and has to stop. In extreme cases the mouth cannot be closed against the force of gravity, and hangs slightly open. The power of smiling is lost, only the corners of the mouth being raised

on the attempt being made, causing an unpleasant, snarling expression. The act of whistling cannot be performed, nor can the cheeks be inflated with air without some escaping between the lips or past the soft palate.

Speech is also impaired. It may be normal in tone at first, then becoming nasal, and finally stopping altogether, partly from failure of the muscles of the lips, tongue, and soft palate, and partly from the loss of respiratory power.

Paresis of the laryngeal group is rare.

The ptosis, the semi-opened mouth, the back-tilted head, and the loss of wrinkles in the skin give a vacuous look to the face, which, when seen, is quite typical of the disease.

The neck and trunk can be affected in a similar way, but it is rare to find the disease starting there.

The respiratory powers are severely embarrassed in many cases, and the most common mode of death is that of respiratory failure, so that the patient must be carefully guarded against any lung trouble, as it proves almost invariably fatal. Attacks of dyspnœa occur, not only on exertion, but also spontaneously and without apparent cause.

The respiratory rate is increased, probably to make up for the lessened amount of air taken in at each inspiration.

In the extremities, any group may be the first to show signs of weakness, but it is usual for those nearest the trunk to exhibit the earliest manifestations of myasthenia.

For instance, cases have been noted where an undue amount of fatigue occurs in the deltoid and the other muscles of the shoulder girdle, and the arms cannot be kept abducted, as in the position of combing the hair.

The handwriting shows a characteristic change—at first the letters are well formed and easily made, gradually they become worse in shape, and more difficult to produce, till the power is lost altogether for a time, returning after a period of rest, when the same train of events is seen over again.

The gait exhibits no peculiarity in a slight case. The patient will walk some distance quite naturally, then become tired, rest for a time, and then go once more on his way. When the disease is well marked, however, the gait

is waddling in character, and the legs are liable to give way suddenly. The superficial and tendon reflexes are normal, but the knee-jerk can be exhausted in some instances by repeated tapping. Muscle sense is perfect, and the movements are quite co-ordinate.

Atrophic muscular changes are quite exceptional, and the diagnosis in some of the cases, where it has been noted, seems to have been a matter of some doubt, although it undoubtedly does occur. Wasting seems to have no tendency to appear in any particular muscle, and the reason for its presence is a matter of conjecture.

The sphincters of the rectum and bladder are never involved.

As regards electrical reactions, on applying a tetanising faradic current to the muscle at first a brisk contraction is obtained, which, however, quickly fades, and ceases altogether to reappear on applying the electrodes again after a rest of a minute or two. This reaction, however, is not constant, but its absence does not prove the non-existence of the disease. The reaction of degeneration is not seen.

Cases of myasthenia fluctuate in a curious way, generally without apparent reason. There are, however, some factors which appear to have an influence for good or bad on the progress of the disease. Thus, patients are sometimes noted to be better in warm weather, growing worse again with the advent of winter. One case in a blacksmith, recovered, except for the fact on a cold day he would notice a return of some weakness in his fingers.

Pregnancy can occur, and labour take place normally; during this period a marked improvement takes place, but lactation again has an extremely bad influence.

Morbid Anatomy.—Certainly the most striking feature of the disease is the absence of any constant pathological change, either macro- or micro- scopical, which could possibly account for the symptoms seen during life.

It seems hard to believe that no lesion can be found which is common to all cases; but from the evidence at our disposal at present, this seems to be the case.

Possibly our methods of *post-mortem* examination are at fault, and improvement in this direction, may, in the future, bring more to light.

Most of the cases in which degenerative and other changes were found do not seem to have been quite typical in their clinical features, and in others, again, the alterations discovered may easily have been caused only indirectly, as in two instances where hæmorrhages were found in the medulla. But both patients died of asphyxia—a mode of death quite sufficient in itself to cause them.

One interesting pathological alteration has been noted in a fair proportion of myasthenics which have been examined *post-mortem*. In sections of muscles there are seen collections of cells, which definitely are lymphocytes, clustered among the fibres. They do not invade the muscle cells, nor do they cause degenerative changes in them, except very occasionally, when the fibres are swollen and stain badly. They were called lymphorrhages by their discoverer—Farquhar Buzzard—but whether they have any direct influence on the production of the disease we cannot say. They are found in voluntary muscle mostly, but also may be seen in the liver, spleen, and kidneys, and in the heart.

As the evidence afforded us by the microscope is so meagre, we know little as regards the ætiology and seat of the disease.

Considering the former, the theory that it is toxic in origin receives the support of almost all observers. It frequently begins with toxic symptoms, such as headache, vague pains, and stiffness in the muscles. Also it not infrequently follows maladies in which organisms or their products are found in the blood, such as enteric fever, scarlatina, otitis media, and migraine, and the symmetry of its distribution also lends itself in support of the view.

The presence of lymphorrhages may also be toxic in origin. This has been argued by some, but the point is not at all clear. The thymus gland is sometimes found to be persistent, but its *rôle* in myasthenia remains in obscurity.

Opinions are divided as to the seat of the disease, whether it is central, in the muscle, or in some part of the peripheral nervous system. The preponderance of the views support the central theory, but at the same time agree with the fact that the symptoms cannot all be covered by brain lesions. Certainly the myasthenic reaction is opposed to it.

The diagnosis is usually easily made. The paresis and easily induced fatigue, recovering quickly after rest, the myasthenic reaction, together with the fluctuating nature of the symptoms, the absence of atrophy and rarity of sensory loss, form an easily-recognised group.

Prognosis is bad, as recovery is not common, and death the usual issue. The limits of time that a myasthenic may live vary greatly from a few weeks up to fifteen years or more. The involvement of the respiratory muscles is a matter of much gravity, on account of the fatality of intercurrent pulmonary diseases and the severe dyspnœic attacks.

As to treatment, very many remedies have been tried with lamentably poor results. Rest and freedom from mental worry are the most important factors. Nutritious and easily assimilated food should be given, and care taken that it is of such a character that it can be easily swallowed, when the powers of deglutition are impaired. Of drugs, many have been used, and all found wanting. Among them are mercury and potassium iodide, strychnine, both by the mouth and hypodermically, iron and arsenic, suprarenal extract. Thyroid extract appeared to benefit one case, but it relapsed after some time. Massage is useless, and electricity has done harm.

In one of the cases which I have seen tuberculin was given with marked improvement of the symptoms, but I can find no mention of this treatment being used in any other instance.

NOTES ON THREE CASES.

In the following cases it will be seen that, while similar in the important details, they vary, one from the other, both in distribution and in severity.

The first is the most severe, and the whole body is implicated with the exception of the eyes. The patient, a young woman, also shows sensory changes and I think some mental atrophy.

The second is generally affected, although not so severely, and the third has only ophthalmic symptoms, which have responded to treatment.

Case I.—Nina J., aged twenty-three, unmarried; school teacher. Previous and family history unimportant.

History of present illness.—Some five years ago her symptoms were ushered in by some pain and soreness in her mouth and throat, and headaches. She lives at the bottom of a steep hill, and found that she was so tired after mounting it that she was quite unable to be punctual at school where she was employed as teacher. She eventually had to resign her post for this reason. Soon after she developed pain and stiffness in her jaws after eating, and difficulty of speech, and a similar tiredness in the arms as was first experienced in the legs.

She has gradually grown worse, and her present condition is as follows:—She is completely bedridden, and is now unable to get herself even into a sitting posture. Her pulse is about 100, temperature is subnormal, and she shows a most curious respiratory change. It would seem as though the diaphragm were working at a normal or slightly increased rate (about 22 to the minute), but superadded to this is an enormously rapid rhythm, which looks as though it were produced by the extraordinary muscles of respiration. It is difficult to count this rate, especially as it is slightly irregular; but it is about 160 to 180 to the minute, and rather resembles the panting of a dog after exercise. It seems to give her no distress. Her eye movements are normal and she has no ptosis. The pupils react normally, but she has some nystagmus. She has a fair amount of weakness of the lips, being unable to whistle. Her soft palate moves badly, and her tongue is weak. Mastication and deglutition are difficult, and her speech is nasal in tone. After reading for some time the words run into one another, and she is inclined to slur them. Her trunk and cervical muscles are very weak, as are her legs and arms. Grip is feeble and badly sustained, and the weight of the

hand is almost sufficient to prevent her from raising her foot from the bed. She writes very well, but can only do a little at a time, as the pen falls from her hand after a very few words. She has no pain of any sort. Anæsthesia is absent except in her solft palate, where it is almost total.

The reflexes (except in the palate) are normal, both superficial and deep. A flexor response is obtained upon stroking the sole of the foot, and ankle clonus cannot be demonstrated. She is quite cheerful and happy. Indeed this is so noticeable that I think it an abnormal mental condition.

Case II.—A. B., female, aged twenty-one, unmarried. Family and previous history unimportant.

History of present illness.—About a year ago she first noticed some drooping of the eyelids, with double vision and general weakness, which has remained stationary up to the present, with fluctuations at times. When seen she had fairly well marked ptosis, diplopia, weakness of the oral muscles, bad gripping power and inability to walk more than a few hundred yards without stopping to rest. Her external and superior recti were weak, the left being worse than the right; in fact she could not move her left eyeball more than one-eighth of an inch outwards, and the rotation of both eyes upwards was limited to a similar extent. Speech is clear, although the lips move but little. Mastication is performed without much trouble, and she has no regurgitation of food through the nose, although the palate is partially involved. Writing tires her quickly. All her reflexes are normal, and sensation is unimpaired.

Case III.—Elizabeth L., aged thirty-eight, unmarried; housekeeper. In April, 1913, she suffered from " inflammation " of both eyes, after which she noticed a drooping of both eyelids, which was worse towards the end of the day. This persisted until March, 1914, when she became worse, and she developed diplopia in addition. On examination she had ptosis in the right eye, with paresis of the superior rectus. Her symptoms are worse in the evening than in the morning. Otherwise she was well, not fatiguing easily.

Tuberculin was tried, with the result that she is greatly improved (June, 1914). She has no phtosis, and no diplopia except when she tries to move the eyes in an upward direc-

tion. Power in the occipito-frontalis is normal, and her general health is now excellent.

In conclusion I wish to state that my best thanks are due, and are hereby given, to Dr. H. Willoughby Gardner, Dr. J. Lytle, and Mr. C. G. Russ Wood, for their kindness in allowing me to examine cases under their care.

ART. XII.—*Four Cases of Pancreatic Disease.*[a] By ETIENNE J. MALHERBE, M.B., B.Ch., B.A.O., B.A., Univ. Dubl.; late House Surgeon to the Royal Boscombe Hospital, Bournemouth.

ANATOMY.

THE pancreas is a compound racemose gland similar in structure to the salivary and parotid glands. It is divided more or less arbitrarily into a head, a neck and a body. In shape the pancreas resembles a prism—its posterior surface being very much narrower than its anterior surface. The organ is deeply situated in the upper portion of the abdomen; part of it lies in the right and part in the left hypochondrium. In position it is very nearly horizontal, the broad head lying in the concavity of the duodenum on the right, while the tail touches the spleen on the left. It crosses the mid-point between the first and second lumbar vertebræ and is separated from the spinal column by the aorta, splenic vein, left kidney and the pillars of the diaphragm. The anterior surface of the spleen is concave with the posterior surface of the stomach lying on it, while the lesser sac of the peritoneum separates the two organs from each other.

The pancreas receives its blood supply from the splenic artery and the pancreatico-duodenal artery. The nerve supply is derived from filaments of the splenic plexus.

The chief duct of the pancreas is the canal of Wirsung, which runs through the substance of the organ from

[a] A Thesis read for the Degree of Doctor of Medicine in the University of Dublin, June, 1914.

left to right, and ends in the descending portion of the duodenum in conjunction with the common bile duct. Very similar in structure to the salivary glands, the pancreas, however, shows a great point of distinction in that the outer portion of each cell contains a clear material which stains readily, while the inner portion, that facing the lumen, contains dark granules from which probably the enzymes of the secretion are formed. There are no intermediary ducts in the pancreas as in the parotid gland. The secretion passes directly into the branches of the chief duct. In addition to this duct system the pancreas also contains certain bodies which are called the Islets of Langerhans. These have probably nothing to do with the digestive properties of the pancreatic secretion, but are connected with the internal secretion.

The secretion is divided into organic and inorganic substances. The organic portion consists of enzymes—(1) trypsin, (2) amylopsin, (3) steapsin, (4) a small amount of proteid matter and traces of leucin, tyrosin, xanthin, and soaps.

Sodium chloride, potassum chloride and phosphates of sodium calcium and magnesium go to make up the inorganic substances.

Pepsin of gastric juice converts the proteids of food into diffusible peptones. Trypsin of pancreatic juice does the same, but acts further. It breaks up the peptones into leucin and tyrosin, &c.

Amylopsin converts starch into maltose, and is the most powerful of all the pancreatic enzymes.

The action of pancreatic secretion on fats is twofold. It breaks up the fat into fatty acids and glycerine by means of its enzyme steapsin. The fatty acids combine with alkaline bases to form soaps.

When artificial pancreatic juice is poured on milk the latter clots. But this action is rarely called into play in the natural course of events in the body, as the rennet of gastric juice probably causes the milk to clot in the stomach.

When the pancreas secretes the pancreatic juice it flows into the duodenum through the canal of Wirsung. It is probably only when the pancreatic secretion is prevented from entering the duodenum that disorders of the pancreas arise. When pancreatic juice is dammed up in that organ, poisonous substances seem to be formed, because it has been shown experimentally that when the chief canal is tied or cut death follows in a few days ; or if this diseased gland is injected into a healthy animal a fatal result follows soon afterwards. In addition to this secretion the pancreas also gives rise to an internal secretion which is believed to come from the Islets of Langerhans. If this secretion is cut off one of the diabetes soon makes its appearance.

In acute pancreatitis the fat of the abdomen, especially of the mesentery and omentum, undergoes a process of necrosis—the so-called fat necrosis. This process is described as follows. The fat is split up into fatty acids and glycerine ; the fatty acids deposited in a crystalline form within the fat cells cause their necrosis, and the glycerine being soluble is absorbed. The fatty acids unite with the calcium to form lime salts. It is recognised by small white opaque patches scattered throughout the fat.

ÆTIOLOGY.

The ætiology of the diseases of the pancreas is by no means known with certainly. Some authors say that the cause is a bacterial infection. And in the absence of any very definite knowledge this view seems to be the most plausible. The question then arises whether the different forms of pancreatic diseases are due to the same organism, to different organisms ; or to the same organism, but that they simply represent different forms of the same disease.

There is the acute pancreatitis which may very easily and very plausibly go over into the suppurative variety. Then there are other authors who put down child-birth or disorders of the biliary system as causes. One can

very easily understand that a gall-stone impacted in the ampulla of Vater could give rise to a blockage of the flow of pancreatic juice and thus set up an acute pancreatitis. Again, in these cases the biliary flow may make its way into the substance of the pancreas where an inflammatory change could take place. Bile, after all, is often infected with bacteria.

DIAGNOSIS.

The diagnosis of pancreatic disease is not easy. In fact one may almost state that it is the exception for a correct diagnosis to be made. There are certain conditions which could put one on the track. A change in the fæces, the pain in the epigastric region, the continuous vomiting, a tumour over the pancreatic area.

Fitz, quoted by Sir William Osler, says :—"Acute pancreatitis is to be suspected when a previously healthy person or a sufferer from occasional attacks of indigestion is suddenly seized with a violent pain in the epigastrium followed by vomiting and collapse, and in the course of twenty-four hours by a circumscribed epigastric swelling, tympanitic or resistant, with slight elevation of temperature. Circumscribed tenderness in the course of the pancreas and tender spots throughout the abdomen are valuable diagnostic signs." There is no doubt very few cases in life have been diagnosticated without the aid of an operation. These cases so often closely resemble intestinal obstruction, acute peritonitis following gastric or duodenal perforation.

Probably one of the best means of arriving at a diagnosis is by a process of exclusion. It will have to be differentiated from perhaps all, or at least most, of the abdominal diseases. We can make only a provisional diagnosis and verify it by means of an exploratory laparotomy.

The symptoms I wish to bring in while describing each of the four cases as I saw them.

Case I.—W. M., a man, aged thirty-one years, was admitted to the Royal Victoria and West Hants Hospital, Bournemouth, with severe pain in the abdomen. Temperature, 98° ; pulse,

128; respirations 24. This patient had always been a very healthy and steady man. On the day of his admission to hospital he was cleaning a motor car, being a chauffeur, when suddenly he was seized by an almost unbearable pain in his abdomen. He became collapsed very soon afterwards and was taken to hospital with all speed. On admission it was noticed that he was very sallow of appearance, with perhaps just a suspicion of jaundice in his conjunctivæ. The pain was first of all more or less localised in the right iliac region, and appendicitis was suspected. But very soon the whole abdomen became distended and the breathing entirely thoracic in character.

On palpation marked tenderness was found all over the abdomen. At the merest touch he screamed out, and any further attempt at examination was given up. The result was that no definite diagnosis was arrived at. Gastric perforation and gall stones were considered, so also were appendicitis and pancreatitis.

Shortly after admission an exploratory laparotomy was performed by Mr. Ramsay. On reaching the peritoneum through an incision through the right rectus muscle it was seen to bulge. On further exploring it this was found to be due to free blood in the peritoneal cavity. The blood was evacuated and the incision was extended the whole length of the abdomen, and a careful search was made for the bleeding point, but without success. The lesser sac contained some clotted blood. There was no sign of intestinal contents in the peritoneal cavity. The appendix, though normal, was removed. Apparently there was nothing wrong with the gall-bladder or bile-ducts, and no rupture was found in either the liver, spleen or kidney.

On the evening of the operation and the following day the patient was kept under morphine, as he was very restless. There was a marked tinge of jaundice on the day following the operation, but the patient's condition steadily improved. The tenderness in the abdomen had subsided, and the abdominal wall moved freely on respiration. The nourishment at this stage consisted of milk and albumen water. He was troubled at times with hiccough, which was easily controlled. On Sunday night the patient had a severe attack of hiccough, and morphine had to be given. On May 2nd, patient started

to vomit, and had a severe attack of diarrhœa. He became collapsed and almost pulseless. The next day the pulse became imperceptible at the wrist, and it was decided to give an intravenous infusion. Three pints were given, and the patient responded splendidly. Sodium bicarbonate was given, one drachm to the pint. Calcium lactate was also given, as the case was diagnosticated as ultra acute hæmorrhagic pancreatitis. Later on three more pints were given with further improvement. The patient had a good night, and next morning, Monday the 3rd, he was much better. Early on Tuesday the 4th, patient had another turn for the worse, with vomiting and hiccough. Intravenous infusion was again resorted to, but without improvement to the patient, and at noon he died.

Post-mortem.—At the *post-mortem* examination it was found that the bleeding came from the middle of the anterior surface of the pancreas. The gland tissue was hard and somewhat swollen, and the separate nodules, if one may call them such, were standing out prominently. There was no sign of the prune juice colour so characteristic of hæmorrhagic pancreatitis, and it was probably due to this fact that Dr. Morland Smith diagnosticated it as an ultra acute hæmorrhagic pancreatitis.

The ætiology of this case could not be discovered.

Case II.—S. N., a young woman aged nineteen, was admitted to the Royal Victoria and West Hants Hospital on February 2, 1914, complaining of pain in the abdomen and vomiting. The family history was good, and the patient herself was always strong and healthy. She never had any serious illness in her life before.

On admission she was obviously very ill, but appeared to be well nourished. She had been delivered of twins on November 10, 1913, and since then she had suffered a great deal with her stomach, and vomited occasionally. Some days before admission she was seized with the pain in the abdomen.

On examination it was found that her abdomen was slightly distended and very tender, especially in the upper part. The movements of the abdomen were apparently not much interfered with on respiration. She vomited much, and her stools were rather bulky; they were clay-coloured, and there was a large amount of fat present.

Before operation a diagnosis was not definitely made, but on account of the above symptoms pancreatitis was strongly suspected. Gastric ulcer was considered, but the relationship to food was by no means definite. There was no history of hæmatemesis or of melæna. Cholecystitis was thought of, but there never was any history of jaundice, and the pain and tenderness were more towards the middle line. Appendicitis was not forgotten either.

On February 3rd Mr. Ramsay opened the abdomen. A fair amount of free fluid was discovered in the peritoneal cavity. This was serous in colour and not blood-stained. The abdominal viscera were found to be normal, except the pancreas. This gland was obviously inflamed and fairly hard. Mr. Ramsay was of opinion that it was a subacute pancreatitis. He simply drained the area with a large tube, and closed the abdomen. As soon as the patient was put back to bed sterile rectal water was started. The temperature gradually rose during the following couple of days, but this may have been due to chest trouble, as signs of bronchitis were found. The temperature rose as high as 104.2° F. The patient was tepid-sponged, and this brought the temperature down to 102°. After this there was a rise and fall in temperature for a few days, then it settled down. An uneventful recovery was made. The patient was first of all kept on fluids, and then solid food was gradually started.

On the 22nd she was discharged in a very fit condition, and up till the present there has been no recurrence.

Case III.—On March 12, 1914, Mrs. S. was admitted to the Royal Victoria and West Hants Hospital suffering from intense jaundice and pain in the abdomen. On being questioned patient said that she came from a very healthy stock, and that she herself had been very well until quite comparatively lately. Some time before her admission to hospital she started to vomit and suffered from severe attacks of nausea. The pain in the abdomen came in fits and starts, while at times it was excruciating. She noticed that she was getting thinner and thinner, and one day she became jaundiced all over the body. This did not improve, but, on the contrary, it became worse. On admission patient was looking very emaciated and most intensely jaundiced. Indeed one could

almost describe it as dark green in colour. The abdomen moved quite freely on respiration. On palpating the abdomen no tumour was discovered anywhere. There was no tenderness except on deep palpation. The gall-bladder was easily felt. The urine contained bile and the fæces had the usual clay-coloured appearance.

A diagnosis of gall-stones was made, and with this in view the patient was operated upon. Mr. Ramsay opened the abdomen, explored the gall-bladder, but there was no evidence of gall-stones. He then directed his attention to the pancreas, and the cause of the trouble was very obvious. The whole head of the pancreas, as far as one could feel, was just one mass of malignant disease. It was hard and very nodular. The rest of the gland was apparently unaffected. The condition was thought to be hopeless, and after putting a drainage tube into the gall-bladder the abdomen was closed. The subsequent course was uneventful except that on one occasion she had a rigor, the cause of which was not ascertained. A notable feature in this case was the small amount of urine passed. Although the patient was put on sterile rectal water, yet during the first week or more the highest amount passed was seven ounces in the twenty-four hours.

The patient was discharged on April 1st, but died a few weeks later.

Case IV.—Mrs. F., aged fifty-six, was admitted to the Royal Victoria and West Hants Hospital on March 12, 1914, complaining of severe pain in the abdomen and vomiting. Patient had always been very well until about four years previously, when she had a short, but very severe, attack of gall-stones, or rather what was thought to be gall-stones. Latterly she had suffered much from indigestion and occasionally from vomiting. A few days before her admission she was suddenly attacked by a very severe pain in the abdomen. She vomited a great deal, and had a feeling of sickness almost all the time. She was brought to hospital.

The patient was a stout woman with a temperature of 98° and a pulse of 96, which by no means gave any clue to the severity of her disease. But the face gave one reliable indication. The patient was found to be in a very serious condition indeed. The face had a drawn look, the tongue was

coated, the abdomen was distended and did not move on respiration.

On palpation the abdomen was found to be rigid and extremely tender all over. Obviously severe peritonitis was present. Owing to the critical condition of the patient and the great difficulty of examination no definite diagnosis was possible. But gall-stones, acute peritonitis due to gastric or duodenal perforation, and appendicitis were thought of. But I am not sure whether pancreatitis was considered.

A few hours after admission Mr. Ramsay opened the abdomen but could not expose the cause of the trouble on account of adhesions. But that the pancreas was the culprit could no longer be doubted. There was a certain amount of free blood-stained fluid in the peritoneal cavity. The omentum and mesentery were one mass of fat necrosis. The other organs of the abdomen were normal. Although the operator tried again and again to reach the pancreas he failed. After putting in a drainage tube he closed the abdomen. The patient was put on rectal saline, and seemed to respond well to it. The following morning the temperature was 97.4° and the pulse 136. She seemed fairly comfortable. At about four o'clock in the afternoon of the same day she suddenly became worse. She went over into a state of collapse, and died at 6 15 p.m.

Post-mortem.—At the *post-mortem* examination it was found that all the fat of all the mesenteries and the whole of the omentum had undergone the process of fat necrosis. It was not in patches here and there, but just in a huge homogeneous mass. The pancreas itself was much enlarged. In the body a big abscess was found, thus making a definite diagnosis of suppurative pancreatitis possible. In the head of the pancreas a large stone, probably a gall-stone, was embedded. This is interesting in that it shows the relationship of the cause of death to the attack of gall-stones four years previously.

The onset in three out of the four cases was very sudden. In two cases marked peritonitis was present. In none of these cases was a definite diagnosis of pancreatitis made. All four of them required an exploratory laparotomy.

It may be mentioned that Mr. Ramsay, who curiously

enough operated on all four cases, was the first to treat a case of hæmorrhagic pancreatitis successfully. He usually drains the pancreas through the abdomen. But the latest method of doing it seems to be from an incision in the flank, and then to work gradually towards the pancreas behind the peritoneum. It has been done in a few cases with success.

ART. XIII.—*Pathological Report of the Rotunda Hospital for One Year, November 1st, 1912, to October 31st, 1913.*[a] By ROBERT J. ROWLETTE, M.D. (Univ. Dubl.); F.R.C.P.I.; Pathologist to the Hospital.

THE work of the Laboratory is almost the same as that recorded in the previous year, 330 specimens having being examined, as compared with 335 in the previous year. This is exclusive of 335 specimens of urine sent to the Laboratory for special examination.

Vaccines have been employed in all septic cases on the maternity side, and also in many gynæcological cases. Autogenous vaccines have been used more largely than heretofore, but the number of severe septic cases being considerably less than usual last year, the actual work in the preparation of vaccines has not increased largely.

Autopsies were performed in the case of eighteen adult patients, eleven of whom died in the Maternity, and seven in the Gynæcological Wing. Brief notes are appended:

CASE I. (Maternity).—H. M., aged thirty-four, died December 5, 1912, nine hours after delivery.

Thoracic organs normal.

Free hæmorrhage in *peritoneum*, and behind *peritoneum*. Left *ovary* inflamed, torn from its connections, and attached to the uterus only by a thin shred of tissue.

All *other organs* normal.

[a] Read in the Section of Pathology of the Royal Academy of Medicine in Ireland on Friday, May 29, 1914.

Case II. (Maternity).—B. D., aged twenty-two, died January 7, 1913, five days after delivery.

Lungs.—Lower lobes of both lungs consolidated.

Heart and *other organs* normal.

Case III. (Maternity).—M. B., aged twenty-two, died January 27, 1913, six weeks after delivery.

Brain.—Large abscess in *left temporal lobe;* meningitis of *base.*

Abscesses in both *parotid regions.*

Lungs.—Hypostatic congestion.

Heart normal.

Uterus.—Septic endometritis and metritis.

Other organs normal.

Cultures of *Streptococcus.*

Case IV.—K. W., aged twenty-three, died February 8, 1913, five weeks after delivery.

Lungs.—Hypostatic congestion.

Heart normal.

Free pus in *peritoneal cavity* with peritonitis.

Other organs normal.

Case V. (Maternity).—K. C., aged forty-one, died February 25, 1913, five hours after admission, undelivered.

Heart.—Fatty infiltration and degeneration.

Other organs normal.

Case VI. (Gynæcological).—E. W., aged twenty-four, died March 11, 1913, five weeks after normal confinement outside hospital.

Lungs normal, except for old tuberculous scar at *right apex.*

Heart normal.

Purulent fluid in *peritoneum.*

Spleen large and soft.

Perforation, 1 cm. in diameter, in *ileum*, five inches from *ileo-cæcal valve.* Numerous ulcers in *ileum*, and a few in *cæcum;* ulcers are deep, with smooth floor and overhanging edges.

Other organs normal.

Case VII. (Gynæcological).—N. C., aged thirty-two, died

March 12, 1913, three weeks after removal of tuberculous tubes and carcinoma of the ovaries.

Lungs normal, except for tuberculous scar at *right apex.*

Heart normal.

Stomach very small; scirrhus of *pylorus* infiltrating wall of stomach. Tuberculosis of *ileum* and *ascending colon.*

Union of *small intestine* and *sigmoid* perfect; no point of leakage detected.

Some free pus in *peritoneum.*

Tuberculous infiltration of *lumbar vertebræ.*

Other organs normal.

Case VIII. (Maternity).—M. O'K., aged twenty-six, died April 1, 1913, ten days after Cæsarean section.

Thoracic organs normal.

Abdominal wound septic.

Septic *peritonitis* with free pus in *peritoneum.*

Septic metritis and endometritis.

Other organs healthy.

Case IX. (Maternity).—M. M'G., aged thirty-eight, died April 22, 1913, two and a half hours after delivery.

Heart.—Fatty degeneration.

Large blood-clot in *uterus.*

Other organs normal.

Case X. (Gynæcological).—I. H., aged fifty-eight, died May 5, 1913, three months after removal of tuberculous uterus and appendages and resection of the rectum.

Lungs.—Slight tuberculous lesions.

Heart normal.

Peritoneum.—Generalised tuberculosis.

Liver.—Fatty degeneration.

Other organs normal.

Case XI. (Gynæcological).—J. F., aged forty-five, died June 23, 1913, five days after myomectomy.

Abdominal wound gaping.

Adhesive peritonitis in lower part of *abdominal cavity.* No effusion.

All organs normal.

Case XII. (Maternity).—M. M., aged twenty-three, died June 27, 1913, fourteen hours after delivery.

Heart.—Plentiful vegetations on *mitral valve*, which is stiff and narrowed.
Heart congested.
Other organs normal.

Case XIII. (Gynæcological).—C. B., aged twenty-six, died July 3, 1913, some hours after opening of abscess in right iliac fossa.
Free pus in *peritoneal cavity.*
Ruptured abscess of *right ovary.*
Other organs normal.

Case XIV. (Gynæcological).—M. M., aged forty-five, died July 5, 1913, eleven days after hysterectomy.
Heart.—Marked mitral stenosis.
Abdominal wound gaping.
Purulent *peritonitis.*
Other organs normal.

Case XV. (Gynæcological).—M. O'B., aged thirty-three, died August 27, 1913, six weeks after abortion.
Purulent *peritonitis.*
Abscess in *right ovary.*
Abscesses in *kidneys.*
Other organs normal.

Case XVI. (Maternity).—J. M., aged thirty-eight, died September 12, 1913, three hours after delivery.
Cervix, uteri and *bladder* torn.
Extensive bleeding.
Other organs normal.

Case XVII. (Maternity).—M. M'D., aged twenty-seven, died September 18, 1913, twelve days after delivery.
Cloudy swelling of both *kidneys.*
Other organs normal.

Case XVIII. (Maternity).—M. H., aged thirty-five, died September 25, 1913, eight days after Cæsarean section.
General *septic peritonitis.*
Organs normal.

Curettings and other fragments were examined on sixty-two occasions for purposes of diagnosis (Table I.)

Tumours and other operation specimens were examined on 154 occasions.

The double vagina presented certain points of interest. Clinically, prior to operation, it presented the characters of a lateral cyst of the vagina, running vertically the whole length of the vagina. It was opened, and found to contain pus. The wall was of stratified squamous epithelium, identical with that of the vagina. This gave the clue to the diagnosis. Further examination revealed that the double vagina was not the only abnormality; a bicornuate uterus was also present.

The varieties of malignant disease of the uterus bore an unusual relation to each other: no adeno-carcinoma was encountered, and there were three cases of sarcoma to four of epithelioma. The figures for the previous seven years had been :—Epithelioma, 47 or 64 per cent.; adeno-carcinoma, 21 or 28 per cent.; sarcoma, 5 or 6.6. per cent.; chorion-epithelioma, 2; and endothelioma, 1. In the three cases of sarcoma this year, as in the three in the previous year, the disease was primary. In only one case of the entire eight cases of sarcoma met in eight years, did the disease occur in a fibro-myoma. In this period the total number of cases of fibro-myoma examined was 273. The occurrence of sarcoma in pre-existent myoma may, therefore, be considered a very rare event.

In the year under review 47 cases of myoma were examined. In 20 of them degenerative changes had occurred, in addition to the fibrosis which is never missing. The degenerations were classified as—fatty, 5; œdema, 2; cystic, 2; mucoid, 1; purulent, 1; grey necrosis, 5; red, 3; and putrefactive, 1. The myoma which had undergone putrefaction was in a puerperal septic uterus. Invasion by pyogenic germs had first occurred, followed by saprophytes, and extensive destruction of the tumour-tissue had taken place. Recovery took place after operation.

The tuberculous uterus showed complete disorganisa-

tion of the organ, which was adherent to all the organs in the vicinity, including the rectum; the latter was also permeated by tuberculosis.

There was a higher incidence of tuberculosis in the cases of salpingitis than usual—19 out of 36. The proportion in the previous eight years was 39 out of 103. In three cases tuberculous salpingitis was found to co-exist with cysts of the ovary, in 1 with cancer of the ovary secondary to the stomach, and in 3 with sarcoma of the uterus.

No dermoids were met during the year. Including 6 lutein cysts, 32 cystic conditions of the ovary were examined. Of the 26 cystic tumours, 17 were ordinary smooth-walled multilocular cysts, and eight were papillomatous. Of these 8, 4 shewed distinct evidence of malignancy. A patient was operated on from whom a multilocular cyst—in which no papillæ had been found—had been removed two years previously; her peritoneum was now studded with masses of malignant epithelial growth. In a case of apparently non-malignant papillary cyst both ovaries were affected: in one the cyst was of fair size—some three inches in diameter—in the other the cyst was minute, not more than $\frac{1}{4}$ inch in diameter, with a very small tuft ingrowing; its presence could not be suspected until the ovary was cut open. In one case there was a papillary cyst in one ovary, while the other was the seat of a solid fibroma.

In the only case of sarcoma of the ovaries the disease was secondary to cancer of the stomach. The subject was a young woman with extensive tuberculosis, including tuberculosis of the tubes.

No less than four fibrous tumours of the ovary came under examination. In none could any trace of malignant structure be detected. One of them, as has been said, was associated with a large papillary cyst of the other ovary; one grew from an ovary—otherwise apparently normal—by a pedicle, and contained several cystic

cavities filled with glairy contents, but without definite walls. A third was associated with myomata of the uterus.

The case of actino-mycosis is of interest. Sections of the affected tissue were at first regarded as tuberculous, and it was only on the appearance of sulphur-granules in the purulent discharge that actino-mycosis was suspected. The pus showed typical club-shaped bodies. A further search of the omental tissue revealed typical masses of the fungus.

The number of specimens of uterine lochia examined was much smaller than in recent years—51, as compared with 133 in 1911-12. This decrease is due to the morbidity in 1913 having been milder than in previous years. For several months of 1913 we were free of any but the mildest sepsis in the wards. In the really severe cases streptococcus was, as usual, the important organism —it was found in three-fourths of the specimens examined. Improved methods of culture have almost succeeded in abolishing the class "diplococci"; most of these are now recognised as streptococci. The gonococcus was found in only 3 specimens.

APPENDIX.

TABLE I.—*Examinations of Curettings and other Fragments for Purposes of Diagnosis.*

Endometritis . . .	27	Sarcoma of uterus . .	1
Erosion of cervix . .	16	Chorionic villi, decidua, &c.	8
Epithelioma of cervix .	3	Wart of ovary . .	1
Mucous polypus of uterus	1	Normal tissue, *débris*, &c.	15

TABLE II.—*Varieties of Endometritis.*

Glandular (including cystic) . . .	4 20	Septic	4
Interstitial . . .	2	Tuberculous . .	1

Table III.—*Operation Specimens.*

Urethral caruncle	1	Ectopic pregnancy	5
Double vagina	1	Salpingitis or pyosalpinx (non-tuberculous)	17
Epithelioma of cervix	4	Tuberculous salpingitis	19
Erosion of cervix	1	Hydrosalpinx	3
Mucous polypus of uterus	1	Carcinoma of ovaries	1
Sarcoma of uterus	3	Cyst of ovary	32
Myoma of uterus	47	Fibroma of ovary	4
Septic uterus	1	Tubo-ovarian abscess	1
Tuberculous uterus	1	Appendix	3
Fibroid uterus	5	Thrombosed vein	2
Prolapsed uterus	1	Actino-mycosis of omentum	1
Bicornuate uterus	1		

Table IV.—*Organisms Observed in and Isolated from the Lochia in Fifty-One Morbid Cases.*

Streptococci	39	B. coli	11
Staphylococci	8	Saprophytes	10
Diplococci	4	Negative	6
Gonococci	3		

LITERARY NOTE.

Messrs. Hodder and Stoughton inform us of a pretty idea which has been suggested to them by a Red Cross helper. It is that ladies all over the country who are making clothing for our wounded sailors and soldiers would like some little personal memento to slip into the pocket or otherwise attach to the garments they are making. It is thought that the most acceptable form such a memento could take would be that of a booklet of sympathy and encouragement, in which the worker might write her name and address. The booklets will be small and quite inexpensive, and Messrs. Hodder and Stoughton will be glad to hear from any society of ladies making clothing for our soldiers and sailors who would like to order small (or large) quantities of them. They regret that they find it impossible to supply the booklets singly. The "Little Book of Courage"—as it is entitled—consists of a number of appropriate quotations from classical English or American poets and prose writers. They have been selected with much skill and care.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Anemia and Resuscitation : an Experimental and Clinical Research. By GEORGE W. CRILE. New York and London : D. Appleton & Company. 1914. 8vo. Pp. xvi + 305.

IN his introduction the author points out that the success or failure of efforts to resuscitate persons apparently dead from drowning, gas poisoning, electric shock, or other causes of suspended animation, will depend on the condition of the brain rather than on that of the heart. The brain suffers irretrievably from anæmia of shorter duration than that which is fatal to the other tissues or organs of the body, and as the normal action of the heart depends on the activity of the brain, it is this which determines the possibility of resuscitation.

An extensive series of experiments was made on dogs which were brought to apparent death by chloroform or asphyxia, and in whom resuscitation was attempted by the method already proposed by the author—namely, centripetal infusion of salt solution with one or two c.c.s. of 1/1000 adrenalin chloride, into an artery, vigorous artificial respiration, and massage of the heart through the chest wall. The experiments are detailed at great length and carefully tabulated. It was found that the treatment, if begun within five minutes after apparent death, stoppage of heart, &c., was successful rapidly, and without after effects. If resuscitation was begun between five and six and a half minutes after apparent death, one dog in seven died ; if treatment was delayed to from seven to eight and a half minutes, only one dog in twelve recovered—in him the brain anæmia had lasted seven and a half minutes—all the others died. Hence it is con-

cluded that recovery from brain anæmia of more than seven and a half minutes is very exceptional, and of ten minutes, impossible. The symptoms presented by the animals after resuscitation, both in the fatal cases and in those who recovered, are detailed with great minuteness, and are of the highest interest. Histological examinations were made of the brains of fatal cases and of those who would probably have recovered. Chromolytic and necrotic changes were found in the nerve cells, and degeneration of nerve fibres. Even in a dog who, four weeks after an anæmia of seven and a half minutes, had apparently recovered completely, degeneration was found in the fibres of the pyramidal and Flechsig's fasciculi and in other tracts.

It is evident that in these experiments we must take into account not merely the anæmia but also the direct poisonous action of chloroform on the nerve cells. This is admitted by the author, who adopted this method of experiment "in imitation of the conditions most likely to afford opportunity for resuscitative measures in failure of the heart in the course of surgical operations."

The anatomical lesions found in cases which seem to have completely recovered show the dangers of even very temporary brain anæmia.

In the second chapter the author considers the clinical aspects of cerebral anæmia. He points out the danger of allowing the blood pressure to become too low in cases of hæmorrhage before resorting to transfusion; the dangers of closing temporarily or permanently the common carotid artery in old subjects; the dangers of pressing on the brain for more than five minutes by retractors or packing. He advocates the temporary closure of the common carotid, with transference of the clamp to the external carotid as soon as this vessel is reached, in cases where hæmorrhage has to be avoided or controlled in operations.

In the following five chapters anæmia of the voluntary muscles is studied. Firstly, a series of experiments in dogs in whom one thigh was compressed by a tourniquet.

Complete arrest of circulation for more than two hours is not safe. The longer the anæmia is maintained the greater the subsequent paralysis, which is permanent after anæmia of seven hours or more, although good functional recovery may occur with permanent destruction of some muscle fibres We then have a chapter on occlusion of the abdominal aorta in man, by embolism or other form of disease, or by ligature. The symptoms and only possible treatment in cases of embolism are given fully. The next section, of great surgical value, is on ligature of the iliac and femoral arteries, and the danger of the supervention of gangrene. The gangrene, contracture, paralysis, or other injuries due to anæmia caused by tight splints or bandages, pressure in spinal cases (bed sores), too abundant subcutaneous saline infusion, flap and suture tension form the subjects of Chapters VI. and VII.

The following chapter on anæmia of the small intestine is one of the most interesting in the book. In some experiments a loop of intestine was ligatured *en masse* for a time. In others an anastomosis was made in the intestine so as to exclude the ligatured part. In others there were other modifications in the experiments. Here, as elsewhere in the book, the experiments are minutely described and tabulated. Anæmia of three hours duration is not permanently hurtful to the dog's intestine, but beyond this limit the danger of gangrene continually increases. Five hours may or may not cause gangrene, more than six hours certainly will. The substances absorbed from the gangrenous gut are highly poisonous, causing collapse and rise or fall of temperature. The symptoms are the same whether the gut is obstructed or anastomosis has been made. While the length of time during which the dog is exposed to the toxæmia is most important, the length of gut ligatured is indifferent.

In a second series of experiments loops of intestine were ligatured, usually for eight hours, then removed, washed, and placed in a "mild antiseptic solution" to kill the bacteria in the intestinal lumen, washed in normal

saline, ground up with sterile sand, filtered, diluted if necessary with sterile saline and injected into the peritoneal cavity of healthy dogs. The symptoms were the same as those caused by ligature after anastomosis. In three cases *sterilised* extract was injected either into veins or abdomen, and all three dogs lived. Hence living bacteria play a part in the poisoning. But in two of the cases which recovered the symptoms were identical with those caused by the non-sterile extract, while in the third case the dose given was very small. Probably products formed during tissue decomposition act together with the toxins from bacteria. The real lesion produced by these toxins is found in the brain cells. The changes found in these in some of the dogs are illustrated in four coloured drawings.

From the experiments very important rules of surgical practice follow. The chief point is to prevent the absorption of toxic fluid from the gangrenous tissue. Therefore, when operating, large clamps should be placed on the healthy intestine in such a manner that none of the poisonous substances can be squeezed into the circulation, and thus reach the brain. The toxin requires several hours to produce the first symptoms. This was proved in the experiments ; and in human subjects, after excision of the gangrenous part, the condition may be satisfactory for some time when, without the occurrence of peritonitis, the symptoms may develop. They are mainly cerebral—restlessness, delirium, coma, absence of pain, rapid pulse and respiration, dry tongue, temperature high or subnormal, diarrhœa, distension of abdomen without rigidity or tenderness. Even while symptoms are absent or slight, the patient may have received a fatal dose of toxin. Hence gangrenous intestine must not be handled. Early diagnosis and prompt operation are of vital importance.

Experiments on anæmia of the kidney by clamping the renal artery alone, or both the artery and vein, show that, if the occlusion last less than thirty minutes, no structural changes follow, and recovery may be complete. After anæmia, of from one half to one hour, there may be

partial recovery, but if the circulation be obstructed for more than one hour, the function is almost lost, and after three hours function is completely destroyed. Hence in operations thirty minutes is the maximal time that it is safe to close the renal artery, and that only if the other kidney is sound.

Closure of the splenic artery caused proliferation of connective tissue, atrophy of pulp, proliferation and hæmorrhage into Malpighian bodies. Anæmia of less than forty-five minutes was not followed by histological changes. A considerable and persistent fall of blood pressure accompanied and followed the operation. Removal of the clamp after more than two hours was apt to be followed by rupture of the spleen.

The concluding chapters deal with resuscitation of the body as a whole in cases of suspended animation, as in drowning, electric shock, gas poisoning, poisoning by anæsthetics, and so on. Following d'Halluin, the author divides death into three stages, which pass insensibly into one another. These are (1) apparent death in which all the vital functions appear to have ceased, but respiration and heart movements still persist feebly; (2) relative death, the few minutes between complete cessation of heart and breathing and (3) absolute death, when resuscitation of the body *as a whole* is impossible, although "different parts of the body may be resuscitated hours or even weeks after absolute death." No time should be lost in determining in which of these stages any particular case is, but, without losing a second, attempts at resuscitation should be commenced and carried on as long as any hope remains. To restore respiration Schäfer's method is preferred to that of Sylvester, and is almost the only means which can be employed in the absence of medical aid and away from a hospital. The different methods of restoring the heart's action are discussed, and the author's method of saline infusion with adrenalin into arteries is fully described.

This method, which is so successful in experiments on dogs, has been tried in three cases where during operation

patients have succumbed on the operating table. The first case recovered from the operation and resuscitation, but died later from exhaustion and the disease for which she was under treatment. The second case died without recovering consciousness, although the heart's action and respiration were resumed. In the third case the heart recommenced to beat after a long interval and during which artificial respiration was continued, breathing was restored. Both functions persisted for about six hours, when they gradually failed and the patient died. The results in man are thus not very encouraging so far but the author is full of hope for the future.

In the Appendix are the reports and rules for treatment in cases of suspended animation of several American commissions. These able documents are of the greatest value, and deserve the most careful study.

In conclusion, we would express our sense of the great labour expended in the carrying out of this very important research, and the great value of the results obtained by Professor Crile and his assistants. The work is well written, although we meet with not a few Americanisms which grate somewhat on British ears. There is a good index and an extensive bibliography. The publishers have done their part well. The print, paper, and binding are all that can be desired, but this may partly account for the relatively high price of the book, twenty-one shillings net. J. M. P.

A Manual of Surgical Anatomy. By CHARLES R. WHITTAKER, F.R.C.S. (Ed.), F.R.S.E., Senior Demonstrator of Anatomy, Surgeons' Hall, Edinburgh, &c. Second Edition, revised and enlarged. Edinburgh: E. & S. Livingstone. 1914. 8vo. Pp. viii + 343.

THE fact that a second edition has been edited is sufficient proof that the above book meets a want. The new edition is a distinct improvement on the old, and is a compact and precise anatomy of those parts more commonly dealt with by the surgeon. The illustrations are particularly clear

and good. The old nomenclature is wisely adhered to, which renders the book useful to all practising surgeons. We can recommend this work to all those who occasionally want a reminder of some particular point in anatomy.

H. S.

Public Health Laboratory Work. By HENRY R KENWOOD, M.B., F.R.S. Edin., D.P.H., F.C.S., Chadwick Professor of Hygiene and Public Health, University of London ; Medical Officer of Health and Public Analyst for the Metropolitan Borough of Stoke Newington ; Examiner in Public Health to the Royal Colleges of Physicians and Surgeons, London, &c. Sixth Edition, with illustrations. London : H. K. Lewis. 1914. Demy 8vo. Pp. xii + 418.

THE fifth edition of Dr. Kenwood's "Public Health Laboratory Work" was favourably reviewed, with some friendly criticism, in the number of this journal for April, 1911 (Vol. cxxxi, third series, No. 472, page 274). We repeat and endorse the opinion expressed in that review that "to all students taking the courses in analytical chemistry required for the Diploma in Public Health this work is an invaluable Laboratory companion."

The leading feature of the present—the sixth—edition is the almost complete elimination from its pages of public health bacteriological work. All but occasional references to bacteriology are excluded in order—so the author tells us—to keep the volume within the compass of a handy laboratory guide to the chemical branch of public health laboratory work. He considers that the needs of the public health student in bacteriology are now fully provided for in several excellent works on that subject in its practical aspect. Part VII. of the fifth edition, which was contributed by Dr. W. G. Savage, and which dealt with the bacteriological examination of water, air, soil, and foods, accordingly disappears.

The present volume consists of introductory notes, six parts, and an index. The subject-matter of the

several parts is as follows :—Part I., the chemical, microscopical, and physical examination of water for public health purposes ; Part II., the analysis of sewage and of sewage effluents ; Part III., soil examination ; Part IV., air analysis ; Part V., food examination ; Part VI., the examination of disinfectants.

The first part, on water analysis, runs to more than 120 pages, and includes sixteen chapters. Of these, the ninth introduces the question of organic matter in water, and the tenth describes the Wanklyn process by which the solution of this problem is attempted. After computing the amount of "free and saline" ammonia originally present in a sample of water, an attempt is made to estimate the amount of nitrogenous organic matter present from the amount of ammonia which can be derived from the breaking up of such matter by strongly alkaline permanganate of potassium at the boiling temperature. In reviewing the fifth edition we criticised the apparatus recommended for the distillation of water in Wanklyn's process, stating that the use of a glass-stoppered retort is to be preferred to a flask fitted with a cork and delivery tube. The latter apparatus is still illustrated on page 79.

Part V., on "Food Examination," is the longest section in the book, of which it occupies 174 pages. It opens with a list from official sources of the results (expressed as a percentage of adulterated samples) of analyses of samples taken under the Sale of Food and Drugs Acts, during the year 1912, in England and Wales. Milk heads the list with 10.9 per cent., and is closely followed by wine with 10.6 per cent., and spirits (9.6 per cent.). Then came butter (6.0 per cent.), confectionery and jam and beer (5.5 per cent.), sugar (5.1 per cent.), and coffee (4.8 per cent.). Bread and tea escaped altogether in this analysis.

In this section of the work, separate chapters deal with milk, butter and cheese, bread, meat, alcoholic beverages, coffee, tea, and preserved and tinned provisions. The question of adulteration of tea by admixture with foreign leaves is illustrated by drawings of the true tea-leaf and of the leaves of the elder, willow and sloe. The process of

"facing" used tea-leaves is described at page 354. There could be no better example of the rascally ingenuity with which fraud is sometimes carried out at the expense of the consumer of the "cup that cheers but not inebriates."

Another instance of misdirected cleverness will be found in the chapter on "Chemical Antiseptics in Food." In 1912, Dr. G. W. Monier-Williams reported to the Local Government Board for England and Wales upon the subject of a new preservative ("mystin") which had been found in milk. This substance was found to consist of a mixture of formaldehyde and sodium nitrite. The object of adding the latter was to prevent the Hehner reaction from indicating the presence of formaldehyde. Hehner's test is to float the milk on sulphuric acid (90 to 94 per cent.) in a test-tube ; a slight greenish tinge forms at the junction of the two liquids if formic aldehyde is absent, but a violet ring if it is present. The colour is permanent for three days. If milk is first diluted with an equal bulk of water the delicacy of the test is increased.

From what has been stated in this notice, the reader will gather that Kenwood's "Public Health Laboratory Work" is an admirable text-book, well-suited to meet the requirements of candidates for the Diploma in Public Health and of all who are interested in Preventive Medicine.

Diseases of the Stomach, including Dietetic and Medicinal Treatment. By George Roe Lockwood, M.D., Professor of Clinical Medicine in the Columbia University ; Attending Physician to Bellevue Hospital, New York. Illustrated, with 126 Engravings and 15 Plates. London : H. K. Lewis. 1913.

This book is written in an interesting and easy style. The author claims to present the subject from the standpoint of personal experience and to have arrived at his opinions by the careful consideration and analysis of cases treated by himself. The book certainly bears throughout

the stamp of the practical man. The symptoms, diagnosis and treatment of the diseases of the stomach receive most attention; ætiology and pathology, on the other hand, while adequately dealt with, are not entered into with too great minuteness of detail.

In classification the book proceeds along orthodox lines, and we cannot say that we have anywhere noticed much originality. Occasional omissions occur—*e.g.*, in dealing with the treatment of gastric hæmorrhage we find no mention of the hypodermic use of serum, and even morphine is recommended only in a half-hearted way. On the whole, however, we have found the book complete and up-to-date, and a reliable guide to everything which the practitioner is likely to require in connection with diseases of the stomach.

It is fairly well illustrated, many of the illustrations consisting of radiograms of patients after the administration of a bismuth meal.

A Handbook for the Post-Mortem Room. By ALEXANDER G. GIBSON, D.M. (Oxon.), F.R.C.P. (Lond.); University Demonstrator in Pathology, Oxford. Oxford Medical Publications. London: Henry Frowde and Hodder & Stoughton. 1914. F'cap. 8vo. Pp. viii + 140. Thirteen figures in text.

ANY medical man may be suddenly confronted with the necessity for making a *post-mortem* examination, and may find himself somewhat rusty in his knowledge of the best methods for determining the cause of death. As, not uncommonly in such cases, the coroner and jury will soon be asking for his attendance, it is important for him to be able to do a sufficiently complete examination in as short a time as possible. This being so we can confidently recommend this small handbook, which will be found of great help, not only to such an unpractised operator, but also to house surgeons and others who wish to make an autopsy in the most complete and practical way.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Walter G. Smith, M.D., F.R.C.P.I.
General Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF PATHOLOGY.

President—J. B. Coleman, C.M.G., M.D., F.R.C.P.I.
Sectional Secretary—William Boxwell, M.D., F.R.C.P.I.

Friday, May 1, 1914.

The President in the Chair.

Experiences with the Wassermann Reaction (with lantern slides).

Professor E. J. McWeeney read a communication under the above title. [It appeared in the July number of this Journal. Page 1.]

The President said that no one could now dispute the importance of the Wassermann reaction. Although Professor McWeeney had only recently taken up the investigation, it was only fair to say that the reaction was being done in Dublin for some years past, and it ought not to be necessary for clinicians to send their specimens to England. He had been in the habit of getting Dr. Adrian Stokes to examine the blood of hospital patients for him.

Dr. Wigham said he did not propose to criticise the paper. He, however, regretted to hear that Professor McWeeney's medical acquaintances had not been in the habit of having the reaction done as a routine. His experience in the Trinity College Laboratory had been that many were only too anxious to get Wassermann's done. Although a great number of experiments had been carried out it was unfor-

tunate that, owing to the amount of work entailed, the clinical history of the cases was not followed, and, therefore, the experience was not so useful as the investigations made by Professor McWeeney. He considered that the experience in the Trinity College Laboratory did not give him any more definite pronouncement on the subject than that made in the paper. He commenced with Birt's method, which he considered the easiest, and which had been found in the army to give satisfactory results. The method differed essentially from the original, the antigen was very much the same as in the original, but the complement was the patient's complement, the cells were the patient's cells, and the amboceptor was from the rabbit; hence the results were not so certain as if the original reaction was used. The Fleming reaction had now been adopted in his laboratory. As it was a method in which inactivated serum was not used it had been found to be too sensitive in some respects, giving a positive reaction in some cases where the original method would have given a negative; it had, however, the advantage that it did not require much blood. He referred to the difficulty of getting practitioners to send a sufficient quantity of blood, and he regretted that even now some of the Dublin hospitals gave an insufficiency of blood to do a Wassermann. Referring to the deaths of the rabbits used, he mentioned that one of them developed pneumonia, and was just discovered at the point of death, when it was killed and it turned out to be very active. He referred to the fact that the complement increased for a considerable time while the blood was left on the clot, and mentioned that in Birt's method it was necessary to leave the clot for at least six hours. He considered that in any case in which human complement was used it was necessary to leave the serum on the clot. Having latterly controlled results with the original Wassermann, working with two antigens, it was found that Fleming's method was on the whole satisfactory.

Dr. Adrian Stokes said he considered that the results of treatment were still better shown by the Wassermann. Patients were seen coming with secondary syphilis giving a strong positive reaction, and after three or four weeks' treatment the reaction might be observed shading off. He considered that a negative Wassermann was the ultimate proof as to whether a patient had any active syphilis in his body

or not, and no patient who ever had syphilis should be satisfied until he gave a negative reaction, and although tertiary cases might take an enormous amount of salvarsan before a negative reaction was produced, yet he thought it was worth trying to bring it about. Referring to deafness and blindness, the result of syphilis, he thought that in some such cases this was brought about by syphilitic neuritis, and suggested the advantage of lumbar puncture. He recalled two or three cases in which he considered if the cerebro-spinal fluid had been examined they would have been found to be syphilitic.

As to the question of heating the serum, he thought that the reason why it was important to do this was that it produced destruction of the non-specific fixing bodies. He suggested that it was unnecessary to kill the guinea-pigs. He had succeeded in getting as much as 10 c.c. from the heart without killing the animal, and after twenty days' time he gave a complement as good as at the beginning. He went on to describe his procedure in making up his solutions. In his own tests he always titrated the complement and the antigen, and having done this, two hæmolytic doses of each were used. Two different antigens were used also, one more active than the other, which helped in the reading. The tendency to use more than two antigens was on the increase. He inquired if Professor McWeeney had ever found hæmolytic substances in guinea-pigs' serum. He pointed out that the cerebro-spinal fluid tests depended upon the quantities used. If large quantities were taken there was more likelihood of getting reaction than if smaller quantities were used. He was at present using .1 serum for diagnosis, and .5, .4, .3, .2, .1 of cerebro-spinal fluid.

Dr. Henry Moore said Dr. Stokes had called attention to the advantage of the Wassermann reaction for checking treatment; but it was not sufficient to treat a patient until he gave a negative Wassermann, and then tell him that he was cured. The patient should come back several times at intervals and get the Wassermann done. In cases where secondary syphilis was well established a patient might give a negative Wassermann, but if tests were done every two or three months it would be generally found that within one year he would give a positive Wassermann again. This he considered the time to commence a second course, and in his

opinion if a second course was then carried out it was improbable that a recurrence would take place. In many of the cases of secondary syphilis that he had seen, a positive Wassermann again was found in about nine months, and when the patients had got another course they then remained negative. He referred to the experience of negative reactions in cases of tertiary syphilitic lesions of the bone. He recalled two cases which gave negative reactions week after week, and then a full positive.

Dr. Bronte inquired what was meant by the Wassermann? Was it the original method or one of its many modifications? He also asked if a Fleming negative could be taken to indicate that the patient was non-syphilitic. How could it be accounted for that a negative Fleming was obtained in the presence of syphilis? He was not in agreement with Dr. Stokes as to the heating of the serum. He was puzzled as to why, when the serum was heated to 60°, a negative was obtained, while, when it was heated to 50°, a positive resulted.

Dr. Dawson said that although it had recently been discovered that in cases of mental defect some 66 per cent. gave a positive reaction in England, he did not think that a similar state of things existed in this country.

It would be found that, except in a few of the larger towns, there was very little syphilis amongst the mental cases in Ireland, and he pointed out that there were very few paralytic symptoms. He was fairly convinced that throughout Ireland syphilis had very little to do with insanity or any other mental defect.

Professor McWeeney, replying to the remarks, said he would like to express his indebtedness to Dr. Moore for his kindness in letting him have the serums from some of his patients. He did not wish to take up the position of denying that simplified methods, such as Birt's and Fleming's, had no value, but he leaned to the view that the original technique should be stuck to whenever possible. Using a Fleming technique which was shown to him by Dr. Thomson, of Belfast, and which involved the testing of serum of a known syphilitic and a normal serum against three or four different strengths of antigen, it seemed to him that it was as complicated as the original method. He would feel anxious about giving a diagnosis on the result of any

simplified method. He considered it doubtful whether one would be justified in acting therapeutically on a positive result obtained by the Fleming method if the original gave a negative, and suggested that the subject was one that ought to be further investigated. He agreed that it was advisable that a lumbar puncture should be done more frequently. He agreed with the remarks of Dr. Dawson that the examination of mental or nervous patients in Ireland would not reveal any high amount of syphilis, but he would, nevertheless, like to have this placed beyond doubt. There could be little doubt that a great deal of the insanity was of a functional kind, but it would be interesting, he thought, to see if this insanity had any of its basis in syphilis. The statement regarding tertiary bone lesions giving a negative Wassermann agreed with his experience.

SECTION OF SURGERY.

President—R. D. Purefoy, M.D., Pres. R.C.S.I.
Sectional Secretary—C. A. Ball, M.D., F.R.C.S.I.

Friday, May 8, 1914.

Mr. A. Blayney in the Chair.

Living Exhibit.

Congenital Pyloric Stenosis in an Infant aged 7 *weeks treated by Gastroenterostomy.*

Mr. C. A. Ball said that as these cases of congenital hypertrophy or stenosis were rare he considered it desirable to bring down this little patient, in whom the condition was well marked. Three weeks ago he was called to the hospital to see a child whose bowels had not moved for ten days. The child from birth was said to be healthy. Oil and enemata had no effect, and it vomited when fed, and passed no urine. It was, therefore, considered that there must have been obstruction high up, and, as the child was in a very serious condition, it was decided to open the abdomen at once. On opening it the pylorus was found to be greatly enlarged, and this enlargement appeared to extend into the duodenum. The swelling was hard and smooth on the surface. He had not seen anything like the condition in the adult. Plastic

operation was not possible, as the obstruction seemed to be complete, and was very hard. The abdomen having been opened, and it being apparent that the child would die if nothing was done, it was decided to do a gastroenterostomy. No difficulty presented itself in doing the operation. The child was very weak for two or three days, but in about twenty-four hours after the operation the bowels moved, and it is now, three weeks after the operation, quite strong and healthy.

He referred to a method of treatment which had been suggested in these cases—viz., washing out the stomach and giving the child enemata, but he considered that this little patient had gone too far for this treatment to be of any use.

Thrombosis of the Internal Jugular Vein.

Mr. W. Pearson showed a specimen removed from a boy, aged fourteen, who suffered from mastoiditis. One side had been operated upon, and, while waiting to have the opposite side done, he developed a high temperature, a foul-coated tongue, and rapid pulse. The optic discs were normal, and no mental symptoms were apparent. There was no tenderness over the mastoid, but there was extreme tenderness down the neck over the course of the jugular vein. It was obviously a case of infection of the lateral sinus. He described the operation which was carried out. A clot tapering off to the lower end was discovered. This clot extended down into the innominate vein. Thrombosis was present in all the branches round the vein. The vein was divided at the posterior belly of the omohyoid and it was determined to remove the clot which was in the vein. Radical mastoid was then done, and round the sinus and into it pus was found.. Saline was irrigated through, the neck wound was drained, and the sinus packed with gauze. As to the infection and the mode of its occurrence it was usually looked upon as a blood infection. This he thought was very doubtful. He suggested that there was an inflammation round the vessels, and that the organisms grew into the clot through the vessels. There was an abscess in the upper part of the vein shut off by the clot which he looked upon as aseptic. He considered that the infection took place through the lymphatics. The case was not much improved by the operation, and terminated fatally on the fourth day.

Dr. H. Stokes asked why the clot was looked upon as aseptic. He inquired if sections were made and a blood culture done. He believed most of these clots to be septic.

Mr. Pearson, replying, said no sections were made of the clot, but his feeling was that the most advanced portions of these clots were aseptic. He recalled a case which came under his notice in which a patient got well after drainage of the sinus and removal of the clot, and in that case the clot was found to be sterile.

The Operative Treatment of Goître.

Mr. D. Kennedy discussed the indications for operation in goître and exophthalmic goître, and gave details of the treatment as carried out by him, advocating early operation in all cases. He always employed general anæsthesia.

Mr. Blayney said he thought the question of operation in cases of exophthalmic goître was not so easy. In these cases he suggested a classification into two distinct types. A patient may have had an enlarged thyroid for years, and in such a case the increase in the rapidity of the pulse was generally moderate and the degree of hyperthyroidism was not great, and with such a patient the operation was attended with no more than the ordinary risk. On the other hand, in cases where the gland is vascular, where there is great rapidity in the pulse and the skin is constantly moist, and there are symptoms of sugar in the urine, he considered operation dangerous. If the operator treats cases of the first type it would be quite possible for him to produce good statistics, but in the latter class of cases he thought the death-rate would be higher than 4 per cent. He pointed out that Mayo recommended that the latter class of cases should not be touched. His own experience of exophthalmic goître was confined to the first type of case.

Sir John Lentaigne said he agreed with the Chairman that there are cases of exophthalmic goître which should be well considered before operation is undertaken, and that there are cases of another type which are not much more troublesome than cases of simple goître. He considered that the use of local anæsthesia could hardly be done without, and that in cases in which there was great dyspnœa etherisation appeared to increase the size of the goître, and thus increased the danger. He suggested that where local anæsthesia is

used a screen should be used to prevent the patient from seeing the blood. He considered that the disease is becoming more common than it was years ago.

Dr. Crofton said he did not think the physician was so hopeless in the treatment of these cases as Mr. Kennedy seemed to suggest. If the tumours are causing dyspnœa surgical interference should, of course, be sought, but he had seen several cases in which the exhibition of pituitary and suprarenal extracts had made the goître disappear.

Mr. W. Pearson said he agreed that sometimes medical treatment in those cases is efficient, but there could be no doubt that medical treatment would not remove a cyst from the thyroid. He disagreed that the physician was the best person to decide when a patient should be operated upon, as there was a danger that he might be opposed to operation until such time as the kidneys, heart, and liver had undergone permanent organic changes, and this should not be waited upon before the operation is undertaken. In all early cases, where the symptoms were mild, he suggested that medical treatment should be given a trial. If a case in which there was no glandular enlargement did not respond to medical treatment, he considered that the right surgical treatment would be pole ligation instead of extirpation; but ligation of the arteries alone would not, he thought, suffice. Post-operative treatment he looked upon as important, the most important thing being to give the patient large quantities of saline for the first forty-eight hours. Acute thyroidism coming on after operation he thought was largely due to rough handling during the operation, and not to absorption from the cut surface of the gland.

Mr. Kennedy, replying, said he never advocated operation in all cases of exophthalmic goître, although he suggested that if all cases were operated upon early no difficulty would be experienced. He thought it was generally admitted that when medicinal means are successful the success is due to the rest rather than to the drugs used. One of the motives of his paper was to call the attention of physicians to the good results of operative treatment in these cases. He considered that the adhesion of the lobe to the trachea was one of the reasons for a good deal of dyspnœa. He agreed that the post-operative hyperthyroidism was due to rough handling during the operation.

SANITARY AND METEOROLOGICAL NOTES.

Vital Statistics.

For four weeks ending Saturday, August 8, 1914.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ended August 8, 1914, in the Dublin Registration Area and the twenty-six principal provincial Urban Districts of Ireland, was 16.4 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,205,280. The deaths registered in each of the four weeks of the period ending on Saturday, August 8, and during the whole of that period in certain of the districts, alphabetically arranged, correspond to the following annual rates per 1,000 :—

County Boroughs, &c.	Week ending				Average Rate for 4 weeks
	July 18	July 25	Aug. 1	Aug. 8	
27 Town Districts	**16.1**	**14.5**	**15.7**	**16.4**	**15.7**
Dublin Reg. Area ...	17.2	15.3	17.3	17.3	16.8
Dublin City	19.0	17.1	18.3	18.3	18.2
Belfast	13.5	14.5	15.0	17.9	15.2
Cork	14.3	13.6	15.6	14.3	14.5
Londonderry	22.8	15.2	17.8	12.7	17.1
Limerick	19.0	12.2	14.9	12.2	14.6
Waterford	24.7	13.3	11.4	9.5	14.7

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain

epidemic diseases registered in the 27 districts during the week ended Saturday, August 8, 1914, were equal to an annual rate of 1.8 per 1,000. Among the 137 deaths from all causes in Belfast were 5 from measles, 4 from scarlet fever, 2 from whooping-cough, 1 from enteric fever, 1 from typhus, and 3 from diarrhœa and enteritis in children under 2 years. Included in the 21 deaths from all causes in Cork were 3 from whooping-cough and 2 from diarrhœa and enteritis in children under 2 years. One of the 9 deaths from all causes in Limerick was from enteric fever, and included in the 2 deaths recorded at Queenstown was 1 from whooping-cough.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 406,000, that of the city being 310,467, Rathmines, 39,155, Pembroke 30,240, Blackrock 9,197, and Kingstown 16,941.

In the Dublin Registration Area the births registered during the week ended August 8 amounted to 166—87 boys and 79 girls, and the deaths to 136—81 males and 55 females.

DEATHS.

The deaths registered, omitting the death of a person admitted into a public institution from a locality outside the Area, represent an annual rate of mortality of 17.3 per 1,000 of the population. During the thirty-two weeks ending with Saturday, August 8, the death-rate averaged 21.7, and was 0.4 below the mean rate for the corresponding portions of the ten years, 1904-1913. The total deaths registered, numbering 136, represent an annual rate of 17.5 per 1,000. The annual rate for the past thirty-two weeks was 23.2 per 1,000, and the average annual rate for the corresponding period of the past ten years was 23.3 per 1,000 of the mean population for all deaths registered.

The deaths (136) included 2 from enteric fever, 2 from measles, 1 from diphtheria, and 10 from diarrhœa and enteritis in children under 2 years. In each of the three pre-

State of Infectious Disease in the Dublin Registration Area, and in Belfast, Cork, Londonderry, Limerick, and Waterford.

The following Table shows the Number of Cases of Infectious Diseases notified under the "Infectious Diseases (Notification) Act, 1889," and the "Tuberculosis Prevention (Ireland) Act, 1908," in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the Cities of Belfast, Cork, Londonderry, Limerick, and Waterford, during the week ended August 8, 1914, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

Cities and Urban Districts	Week ending	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Pyrexia (origin uncertain) [a]	Enteric or Typhoid Fever	Erysipelas	Puerperal Fever	Whooping-cough	Cerebro-spinal Fever	Acute Polio-myelitis	Pulmonary Tuberculosis	Total
City of Dublin	July 18	*	*	9	-	-	2	-	-	11	1	-	*	-	-	48	71
	July 25	*	*	3	-	-	7	-	-	16	4	-	*	-	-	41	71
	Aug. 1	*	*	10	-	-	2	-	-	7	1	-	*	-	-	37	57
	Aug. 8	◦	*	9	-	-	2	-	-	3	4	-	*	-	-	19	37
Rathmines and Rathgar Urban District	July 18	*	*	2	-	-	-	-	-	5	1	-	*	*	*	*	8
	July 25	*	*	3	-	-	1	-	-	22	1	-	*	*	*	*	27
	Aug. 1	*	*	-	-	-	-	-	-	2	1	-	*	*	*	*	3
	Aug. 8	◦	*	1	-	-	1	-	1	2	1	-	*	*	*	*	6
Pembroke Urban District	July 18	-	-	-	-	-	3	-	-	1	-	-	-	-	-	-	4
	July 25	1	-	2	-	-	1	-	-	-	1	-	-	-	-	-	5
	Aug. 1	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	2
	Aug. 8	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	2
Blackrock Urban District	July 18	-	*	1	-	-	-	-	-	-	-	-	*	-	*	*	1
	July 25	2	*	-	-	-	-	-	-	-	-	-	*	-	*	*	2
	Aug. 1	-	◦	-	-	-	-	-	-	-	-	-	*	-	*	*	-
	Aug 8	-	◦	-	-	-	-	-	-	-	-	-	*	-	*	*	-
Kingstown Urban District	July 18	*	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
	July 25	*	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
	Aug. 1	*	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
	Aug. 8	*	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
City of Belfast	July 18	◦	*	19	1	-	4	-	-	4	2	-	*	-	-	1	31
	July 25	*	*	34	-	-	3	-	-	-	2	-	*	-	-	6	45
	Aug. 1	◦	*	20	1	-	2	-	-	3	3	-	*	-	-	2	31
	Aug. 8	*	*	23	-	-	2	-	2	3	2	-	*	-	-	5	37
City of Cork	July 18	3	*	1	-	-	1	-	-	-	1	-	*	*	*	*	6[b]
	July 25	1	*	2	-	-	-	-	-	-	1	2	*	*	*	*	6[c]
	Aug. 1	2	*	4	-	-	-	-	-	1	-	-	*	*	*	*	7[d]
	Aug. 8	-	*	5	-	-	1	-	-	-	2	1	*	*	*	*	9[e]
City of Londonderry	July 18	*	*	-	-	-	-	-	-	-	-	-	*	*	*	*	-
	July 25	*	*	-	-	-	1	-	-	-	-	-	*	*	*	*	1
	Aug. 1	*	*	-	-	-	-	-	-	-	-	-	*	*	*	*	-
	Aug. 8	*	*	2	-	-	-	-	-	-	-	-	*	*	*	*	2
City of Limerick	July 18	*	*	1	-	-	-	-	-	-	-	-	*	-	*	*	1
	July 25	*	*	-	-	-	-	-	-	1	-	-	*	-	*	*	1
	Aug. 1	*	*	1	-	-	1	-	-	1	-	-	*	-	*	*	3
	Aug. 8	*	*	1	-	-	-	-	-	1	-	-	*	-	*	*	2
City of Waterford	July 18	*	*	-	-	-	-	-	-	-	-	-	*	*	*	1	1
	July 25	*	*	-	-	-	-	-	-	-	-	-	*	*	*	1	1
	Aug. 1	*	*	2	-	-	-	-	-	-	-	-	*	*	*	-	2
	Aug. 8	*	*	3	-	-	-	-	-	-	-	-	*	*	*	-	3

[a] Continued Fever. [b] Not including 14 cases of choleraic diarrhœa. [c] Not including 6 cases of choleraic diarrhœa and one of whooping-cough. [d] Not including 18 cases of choleraic diarrhœa. [e] Not including 7 cases of choleraic diarrhœa.

ceding weeks deaths from diphtheria had been 2, 1, and 0 ; from enteric fever, 1, 2, and 2 ; from measles, 6, 2, and 0 ; and from diarrhœa and enteritis in children under 2 years, 6, 6, and 9 respectively.

Of 25 deaths from tuberculosis (all forms), 19 were attributed to pulmonary tuberculosis, 2 to tubercular meningitis, 2 to abdominal tuberculosis, and 2 to other forms of the disease. In each of the three preceding weeks, deaths from all forms of tuberculosis had been 24, 30, and 28.

There were 7 deaths from cancer, or malignant disease.

There were 3 deaths of infants from premature birth, 2 deaths from convulsions, and 3 from congenital debility.

The deaths from pneumonia included 3 from broncho-pneumonia and 1 from lobar pneumonia.

Fourteen deaths were caused by organic diseases of the heart. There were 9 deaths from bronchitis.

There were 4 accidental deaths, including 1 death caused by drowning, and 3 deaths were stated in the Coroner's certificates of the finding of the jury to have been caused by " gunshot wound by unknown soldier."

In 4 instances the cause of death was " uncertified," there having been no medical attendant during the last illness ; these cases include the deaths of 2 infants under one year old, and the death of 1 person aged 78 years.

Thirty-five of the persons whose deaths were registered during the week were under 5 years of age (26 being infants under 1 year old, of whom 8 were under 1 month old), and 30 were aged 65 years and upwards, including 24 persons aged 70 and upwards. Among the latter were 15 aged 75 years and upwards, of whom 2 (a male and a female) were stated to have been aged 91 and 90 years, respectively.

Cases of Infectious Diseases under Treatment in Dublin Hospitals.

During the week ended August 8, 1914, 7 cases of enteric fever were admitted to hospital, 8 were discharged, there was 1 death, and 70 cases remained under treatment in hospital at the close of the week, the respective numbers in hospital at the close of the three preceding weeks having been 40, 69, and 72.

Three cases of measles were admitted to hospital, 10 cases were discharged, and 16 cases remained under treatment at the close of the week. At the end of the three preceding weeks such cases had been 55, 48, and 23 respectively.

Fourteen cases of scarlet fever were admitted to hospital, 11 were discharged, there was one death, and 72 cases remained under treatment at the close of the week. This number is exclusive of 20 patients under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital. At the close of the three preceding weeks the cases in hospital had been 92, 79, and 70 respectively.

Seven cases of diphtheria were admitted to hospital, and 5 were discharged. The cases in hospital, which at the close of the three preceding weeks had numbered 40, 35, and 28 respectively, were 30 at the close of the week under review.

In addition to the above-named diseases, 4 cases of pneumonia were admitted to hospital, 6 were discharged, and 11 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, August 8, in 96 large English towns (including London, in which the rate was 11.9) was equal to an average annual death-rate of 12.0 per 1,000 persons living. The average rate for 16 principal towns of Scotland was 11.6 per 1,000, the rate for Glasgow being 11.9, and that for Edinburgh 11.2.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by A. Maxwell Williamson, M.D., B.Sc., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended August 8. From this report it appears that of a total of 70 cases notified, 39 were of scarlet fever, 6 of phthisis, 18 of diphtheria, 4 of erysipelas, 2 of cerebro-spinal fever, and 1 of puerperal fever. Among the 534 cases of infectious diseases in hospital at the close of the week were 228 cases of scarlet fever, 214 of phthisis, 59 of diphtheria, 3 of whooping-cough, 7 of enteric fever, 2 of cerebro-spinal fever, 2 of chicken-pox, 7 of erysipelas, and 1 of puerperal fever.

Vital Statistics.

For four weeks ending Saturday, September 5, 1914.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ended September 5, 1914, in the Dublin Registration Area and the twenty-six principal provincial Urban Districts of Ireland, was 18.1 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,205,280. The deaths registered in each of the four weeks of the period ending on Saturday, September 5, and during the whole of that period in certain of the districts, alphabetically arranged, correspond to the following annual rates per 1,000 :—

County Boroughs, &c.	Week ending				Average Rate for 4 weeks
	Aug. 15	Aug. 22	Aug. 29	Sept. 5	
27 Town Districts	**15.3**	**16.1**	**17.6**	**18.1**	**16.8**
Dublin Reg. Area ...	19.1	16.6	18.8	18.9	18.3
Dublin City	20.0	16.3	21.2	20.3	19.4
Belfast	14.8	17.6	18.9	20.3	17.9
Cork	11.6	24.5	14.3	11.6	15.5
Londonderry	17.8	10.1	10.1	12.7	12.7
Limerick	4.1	13.5	21.7	17.6	14.2
Waterford	13.3	17.1	17.1	15.2	15.7

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 27 districts during the week ended Saturday, September 5, 1914, were equal to an annual

rate of 3.7 per 1,000. Among the 155 deaths from all causes in Belfast were 2 from measles, 2 from scarlet fever, 2 from whooping-cough, and 45 from diarrhœal diseases. Included in the 17 deaths from all causes in Cork were 1 from whooping-cough and 2 from diarrhœa and enteritis in children under 2 years. One of the 2 deaths from all causes in Ballymena was from enteric fever. Of the 10 deaths registered in Londonderry, 3 were from diarrhœa and enteritis in children under 2 years, and 2 deaths from the same cause are included respectively among the 3 deaths from all causes in Lisburn and among the 6 deaths registered in Newtownards.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 406,000, that of the city being 310,467, Rathmines, 39,155, Pembroke 30,240, Blackrock, 9,197, and Kingstown, 16,941.

In the Dublin Registration Area the births registered during the week ended September 5 amounted to 187—104 boys and 83 girls, and the deaths to 160—76 males and 84 females.

DEATHS.

The deaths registered, omitting the deaths (numbering 13) of persons admitted into public institutions from localities outside the Area, represent an annual rate of mortality of 18.9 per 1,000 of the population. During the thirty-six weeks ending with Saturday, September 5, the death-rate averaged 21.4, and was 0.5 below the mean rate for the corresponding portions of the ten years, 1904–1913. The total deaths registered, numbering 160, represent an annual rate of 20.5 per 1,000. The annual rate for the past thirty-six weeks was 22.8 per 1,000, and the average annual rate for the corresponding period of the past ten years was 23.0 per 1,000 of the mean population for all deaths registered.

The deaths (160) included 1 from enteric fever, 1 from influenza, 2 from diphtheria, and 18 from diarrhœa and enteritis in children under 2 years. In each of the three preceding weeks deaths from diphtheria had been 2, 1, and 4 :

State of Infectious Disease in the Dublin Registration Area, and in Belfast, Cork, Londonderry, Limerick, and Waterford.

The following Table shows the Number of Cases of Infectious Diseases notified, under the "Infectious Diseases (Notification) Act, 1889," and the "Tuberculosis Prevention (Ireland) Act, 1908," in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the Cities of Belfast, Cork, Londonderry, Limerick, and Waterford, during the week ended September 5, 1914, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

Cities and Urban Districts	Week ending	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Pyrexia (origin uncertain) [a]	Enteric or Typhoid Fever	Erysipelas	Puerperal Fever	Whooping-cough	Cerebro-spinal Fever	Acute Poliomyelitis	Pulmonary Tuberculosis	Total
City of Dublin	Aug. 15	*	*	12	-	-	3	-	-	2	2	-	*	-	-	18	37
	Aug. 22	*	*	12	-	-	6	-		8	2	-	*	-	-	28	56
	Aug. 29	*	*	5	-	-	10	-		8	4	-	*	-	-	27	54
	Sept. 5	*	*	6	-	-	3	-	1	9	-	-	*	-	-	32	51
Rathmines and Rathgar Urban District	Aug. 15	*	*	-	-	-	1	-	-	2	1	-	*	*	*	*	4
	Aug. 22	*	*	1	-	-	-	-	-	1	2	-	*	*	*	*	3
	Aug. 29	*	*	-	-	-	3	-	-	-	2	-	*	*	*	*	5
	Sept. 5	*	*	1	-	-	-	-	-	1	-	-	*	*	*	*	2
Pembroke Urban District	Aug. 15	1	-	-	-	-	-	-	-	1	-	-	-	-	*		2
	Aug. 22	-	-	1	-	-	-	-	-	-	-	-	-	-	*	1	2
	Aug. 29	-	-	-	-	-	1	-	-	-	1	-	-	-	*	-	2
	Sept. 5		-	-	-	-	-	-	-			-	-	-	*	1	3
Blackrock Urban District	Aug. 15	-	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
	Aug. 22	-	*	2	-	-	-	-	-	-	-	-	*	-	*	-	2
	Aug. 29	-	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
	Sept. 5	-	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
Kingstown Urban District	Aug. 15	*	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
	Aug. 22	*	*	-	-	-	-	-	-	-	-	-	*	-	*	-	-
	Aug. 29	*	*	1	-	-	-	-	-	-	1	-	*	*	*	-	2
	Sept. 5	*	*	-	-	-	-	-	-	-	-	-	*	*	*	-	-
City of Belfast	Aug. 15	*	*	20	-	-	3	-	-	2	3	1	*	-	1	2	32
	Aug. 22	*	*	28	-	-	1	-	-	-	6	-	*	-	-	6	41
	Aug. 29	*	*	26	-	-	4	-	-	4	5	-	*	-	-	2	41
	Sept. 5	*	*	50	-	-	4	-	-	3	3	-	*	-	-	5	65
City of Cork	Aug. 15	-	*	3	-	-	3	-	1	1	-	-	*	*	*	*	8[b]
	Aug. 22	3	*	-	-	-	4	-	1	-	1	-	*	*	*	*	9[c]
	Aug. 29	-	*	2	-	-	-	-	1	2	1	-	*	*	*	*	6[d]
	Sept. 5		*	4	-	-	-	1	-	4	-	-	*	*	*	*	9[e]
City of Londonderry	Aug. 15	*	*	-	-	-	-	-	-	-	-	-	*	*	*	*	-
	Aug. 22	*	*	-	-	-	-	-	-	-	1	-	*	*	*	*	1
	Aug. 29	*	*	-	-	-	-	-	-	-	-	-	*	*	*	*	-
	Sept. 5	*	*	-	-	-	-	-	-	-	-	-	*	*	*	*	-
City of Limerick	Aug. 15	*	*	4	-	-	-	-	-	-	-	-	*	-	*	*	4
	Aug. 22	*	*	3	-	-	-	-	-	-	-	-	*	-	*	*	3
	Aug. 29	*	*	5	-	-	-	-	-	-	-	-	*	-	*	*	5
	Sept. 5	*	*	7	-	-	-	-	-	-	1	-	*	-	*	*	8
City of Waterford	Aug. 15	*	*	3	-	-	-	-	-	-	-	-	*	*	*	3	6
	Aug. 22	*	*	2	-	-	-	-	-	-	-	-	*	*	*	1	3
	Aug. 29	*	*	3	-	-	-	-	-	-	-	-	*	*	*	-	3
	Sept. 5	*	*	1	-	-	-	-	-	-	-	-	*	*	*	1	2

[a] Continued Fever. [b] Not including 9 cases of choleraic diarrhœa. [c] Not including 18 cases of choleraic diarrhœa. [d] Not including 19 cases of choleraic diarrhœa. [e] Not including 19 cases of choleraic diarrhœa.

from enteric fever, 1, 0, and 2; from influenza, 0, 0, and 0; and from diarrhœa and enteritis in children under 2 years, 11, 13, and 28 respectively.

Of 34 deaths from tuberculosis (all forms), 25 were attributed to pulmonary tuberculosis, 5 to tubercular meningitis, 3 to abdominal tuberculosis, and 1 to disseminated tuberculosis. In each of the three preceding weeks, deaths from all forms of tuberculosis had been 22, 21, and 22.

There were 20 deaths from cancer, or malignant disease.

There were 2 deaths of infants from premature birth, 2 deaths from convulsions, and 5 from congenital debility.

The deaths from pneumonia included 3 from broncho-pneumonia, 3 from lobar pneumonia, and 1 from pneumonia (type not distinguished).

Fifteen deaths were caused by organic diseases of the heart. There were 5 deaths from bronchitis. There was 1 accidental death.

In 4 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases comprise the deaths of 2 infants under one year old, and the deaths of 2 persons aged 65 years and upwards.

Fifty-one of the persons whose deaths were registered during the week were under 5 years of age (37 being infants under 1 year old, of whom 10 were under 1 month old), and 33 were aged 65 years and upwards, including 22 persons aged 70 and upwards. Among the latter were 11 aged 75 years and upwards, of whom 1 (a female) was stated to have been aged 90 years.

Cases of Infectious Diseases under Treatment in Dublin Hospitals.

During the week ended September 5, 1914, 14 cases of enteric fever were admitted to hospital, 18 were discharged, there was 1 death, and 76 cases remained under treatment in hospital at the close of the week, the respective numbers in hospital at the close of the three preceding weeks having been 77, 84, and 81.

One case of measles was admitted to hospital, 2 cases were discharged, and 4 cases remained under treatment at the close of the week. At the end of the three preceding weeks such cases had been 11, 4, and 5 respectively.

Sixteen cases of scarlet fever were admitted to hospital, 18 were discharged, and 54 cases remained under treatment at the close of the week. This number is exclusive of 18 patients under treatment at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital. At the close of the three preceding weeks the cases in hospital had been 64, 68, and 56 respectively.

Six cases of diphtheria were admitted to hospital, 2 were discharged, and there was one death. The cases in hospital, which at the close of the three preceding weeks had numbered 29, 29, and 33 respectively, were 36 at the close of the week under review.

In addition to the above-named diseases, 7 cases of pneumonia were admitted to hospital, 8 were discharged, and 21 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, September 5, in 96 large English towns (including London, in which the rate was 15.4) was equal to an average annual death-rate of 14.4 per 1,000 persons living. The average rate for 16 principal towns of Scotland was 16.0 per 1,000, the rate for Glasgow being 18.1, and that for Edinburgh 13.5.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by A. Maxwell Williamson, M.D., B.Sc., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended September 5. From this report it appears that of a total of 87 cases notified, 48 were of scarlet fever, 14 of phthisis, 18 of diphtheria, 3 of erysipelas, 3 of enteric fever, and 1 of puerperal fever. Among the 563 cases of infectious diseases in hospital at the close of the week were 232 cases of scarlet fever, 220 of phthisis, 73 of diphtheria, 1 of whooping-cough, 10 of enteric fever, 1 of cerebro-spinal fever, 4 of measles, 8 of erysipelas, and 1 of puerperal fever.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the month of August, 1914.

Mean Height of Barometer, - - -	29.971 inches.
Maximal Height of Barometer (31st, at 9 a.m.),	30.361 ,,
Minimal Height of Barometer (2nd, at 9 a.m.),	29.509 ,,
Mean Dry-bulb Temperature, - -	59.7°.
Mean Wet-bulb Temperature, - -	56.9°.
Mean Dew-point Temperature, - -	54.5°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.428 inch.
Mean Humidity - - - -	83.5 per cent.
Highest Temperature in Shade (on 14th), -	75.9°.
Lowest Temperature in Shade (on 17th), -	48.1°.
Lowest Temperature on Grass (Radiation) (5th),	47.°4.
Mean Amount of Cloud, - - -	51.0 per cent.
Rainfall (on 17 days), - - -	3.223 inches.
Greatest Daily Rainfall (on 14th), - -	1.001 inch.
General Directions of Wind, - - -	W., E.

Remarks.

A warm, but changeable month, with some heavy rainfalls. Outstanding features were the two violent thunderstorms of the 14th, in which an inch of rain fell in Dublin, and a heavy rainfall in this city and the northern half of the County Dublin on the 29th within the limits of an anticyclone, or high pressure system of some intensity. This latter rain-storm was connected with the existence of two air-currents, the upper from S.W., the lower from E. Along the coast-line south of Dublin—that is, under the lee of the Dublin and Wicklow Mountains—the rainfall was scarcely one-half of that recorded in the city and northern suburbs. The thunderstorms of the 14th were of quite exceptional violence—the first prevailing from 6 30 to 7 15 p.m., the second from 9 p.m. till after midnight. The lightning was almost incessant from time to time and the thunder claps occasionally shook the houses, some of which were struck by lightning.

Until the 11th areas of relatively low pressure hovered off

the western shores of Ireland and Scotland, causing S.W. winds and frequent showers. An anticyclonic period followed, interrupted on the 14th by a shallow thunderstorm-depression which passed northwards across Ireland. The day named was in Dublin the warmest of the present season, the thermometric range being from 63.0° to 75.9°. A succession of beautiful days followed the thunderstorms of the 14th, and atmospheric pressure was uniformly rather high, with slight gradient, till the 22nd, when a depression of some consequence spread in over Ireland from the Atlantic. A similar system came in on the 25th. In both cases breaks in the weather resulted. After the downpour on the 29th, summer returned, and the month closed warm and fair.

In Dublin the arithmetical mean temperature (61.2°) was 1.5° above the average (59.7°). The mean of the dry-bulb readings at 9 a.m. and 9 p.m. was 59.7°. The mean maximum temperature was 67.4°; the mean minimum was 55.0°. In the forty-nine years ending with 1914, August was coldest in 1912 (M. T. = 54.4°) and in 1881 (M. T. = 57.0°), and warmest in 1899 (M. T. = 63.4°). In 1911 the M. T. was 63.2°. In 1913 it was 59.7°.

The mean height of the barometer was 29.971 inches, or 0.074 inch above the corrected average value for August—namely, 29.897 inches. The mercury rose to 30.361 inches at 9 a.m. of the 31st, and fell to 29.509 inches at 9 a.m. of the 2nd. The observed range of atmospheric pressure was, therefore, 0.852 inch.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 59.7°. It was 0.9° above the value for July, 1914. Using the formula, *Mean Temp.* = *Min.* + (*Max.* — *Min.*) × .47, the mean temperature was 60.8°, or 1.5° above the average mean temperature for August, calculated in the same way, in the thirty-five years, 1871–1905, inclusive (59.3°). The arithmetical mean of the maximal and minimal readings was 61.2°, compared with a thirty-five years' average of 59.7°. On the 14th the thermometer in the screen rose to 75.9°—wind, E.S.E.; on the 17th, the temperature fell to 48.1°—wind, E. The minimum on the grass was 47.4° on the 5th. August, 1912, established a record for low temperatures.

The rainfall was 3.223 inches on 17 days. The average rainfall for August in the thirty-five years, 1871–1905, inclusive, was 3.240 inches, and the average number of rainy days was 18. The rainfall, therefore, and the rain-days were very slightly below the average. In 1900 the rainfall in August was very large—5.871 inches on 17 days; in 1889, also, 5.747 inches were registered on 22 days. On the other hand, in 1884, only .777 inch was measured on 8 days. August, 1905, established a record for rainfall in this month in Dublin, for the measurement was 7.019 inches on 22 days, 3.436 inches having fallen on the 25th. In 1912 the rainfall was as much as 5.277 inches on 23 days; in 1913, it was only .941 inch on 10 days.

Fresh winds were noted on 7 days, but never attained the force of a gale (8). Fogs occurred on the 17th, 19th and 30th. Temperature reached or exceeded 70° in the screen on 6 days, and on 1 day (the 17th) fell below 50°. A lunar halo was seen on the 7th. Thunderstorms occurred on the 2nd, 14th and 26th. Two storms on the 14th were of exceptional violence.

The rainfall in Dublin during the eight months ending August 31st amounted to 14.467 inches on 131 days, compared with 16.672 inches on 127 days in 1913, 22.088 inches on 150 days in 1912, 11.592 inches on 109 days in 1911, 24.382 inches on 149 days in 1910, 16.677 inches on 119 days in 1909, 17.244 inches on 135 days in 1908, 16.588 inches on 146 days in 1907, 15.425 inches on 139 days in 1906, only 9.455 inches on 96 days during the same period in 1887, and a thirty-five years' average (1871–1905) of 17.950 inches on 131 days.

At the Normal Climatological Station in Trinity College, Dublin, the observer, Mr. Sidney A. Clark, reports that the mean value of the readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 61.3°. The arithmetical mean of the daily maximal and minimal temperatures was 60.6°, the mean maximum being 68.2°, and the mean minimum 53.0°. The screened thermometers rose to 77.0° on the 14th, and fell to 47.5° on the 12th. On the 12th and 25th the grass minimum was 40.0°. Rain fell on 16 days to the amount of 3.107 inches, the greatest fall in 24 hours being 1.020 inches on the 14th.

The duration of bright sunshine, according to the Campbell-Stokes recorder, was 194.2 hours, of which 12.0 hours occurred on the 12th. The mean daily duration was 6.3 hours. The mean sub-soil temperatures at 9 a.m. were—at 1 ft., 61.7° ; at 4 ft., 58.7°. Belts of dense ground fog were observed at 9 p.m. of the 18th. Thunderstorms occurred on the 14th and 26th.

At Ardgillan, Balbriggan, Captain Edward Taylor, D.L., registered 3.28 inches of rain on 16 days, the greatest fall in 24 hours being 1.08 inch on the 29th. The rainfall was .21 inch below the average of 21 years, and the rain-days were 1 in defect. Since January 1, 1914, 15.61 inches of rain have fallen on 115 days, the measurement being 3.20 inches, and the rain-days 10 less than the average. The thermometer in the screen rose to 73.0° on the 23rd, and fell to 46.9° on the 5th.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, Co. Dublin, was 3.30 inches on 17 days ; the heaviest fall in 24 hours was .82 inch on the 29th.

At Stirling, Clonee, Co. Meath (231 feet above the sea), Mr. J. Pilkington recorded a rainfall of 4.15 inches on 15 days. The largest measurement on any one day was 1.24 inches on the 29th ; but 1.22 inches also fell in a heavy thunderstorm on the night of the 14th. No rain fell at Clonee from the 9th to the 22nd with the exception of the downpour of the 14th. In the eight months ended August 31, the rainfall at Clonee measured 17.55 inches on 122 days.

At the Ordnance Survey Office, Phœnix Park, rain fell on 17 days to the amount of 3.845 inches, the greatest rainfall in the 24 hours being 1.140 inches on the 29th. The total duration of bright sunshine was 199.5 hours, the greatest daily sunshine being 12.1 hours on the 12th and again on the 17th. The thermometer rose to 77.6° in the screen on the 14th, having fallen to 40.8° on the 12th.

Miss C. Violet Kirkpatrick measured 4.05 inches of rain on 14 days at Cheeverstown Convalescent Home, Clondalkin, Co. Dublin, the largest record in 24 hours being 1.82 inches in the thunderstorms of the 14th. On the 29th .87 inch fell.

Dr. Christopher Joynt, F.R.C.P.I., recorded a rainfall of 3.186 inches on 16 days at 21 Leeson Park, Dublin. The

greatest fall in 24 hours was probably 1.000 inch, which occurred on the 14th. In July, 2.208 inches fell at this station on 19 days, the largest fall in 24 hours being .595 inch on the 4th.

Mr. Harold Fayle forwards the following abstract of observations made by him during August at 19 Highfield Road, Rathgar, Co. Dublin :—

Mean Height of Barometer,	29.985 inches.
Highest Corrected Reading (31st, 9 a.m.),	30.37 ,,
Lowest Corrected Reading (2nd, 9 a.m.),	29.53 ,,
Mean Dry-bulb Temperature,	60.2°.
Mean Wet-bulb Temperature,	57.2°.
Mean Vapour Pressure,	.426 inch.
Mean Humidity,	82 per cent.
Mean Maximal Temperature,	68.5°.
Mean Minimal Temperature,	52.7°.
Absolute Maximum (13th and 14th),	78°.
Absolute Minimum (17th),	44°.
Arithmetical Mean Temperature,	60.6°.
Lowest Temperature on Grass (17th and 25th),	41°.
Highest Temperature in Sun (25th),	139°.
Rainfall, on 16 days	3.45 inches.
Greatest Daily Rainfall (14th),	1.23 ,,
Mean Amount of Cloud,	6.3 per cent.
General Directions of Wind,	S.W., W., S.E.

On the evening of the 29th and morning of the 30th 100 per cent. of saturation was noted.

Mr. George B. Edmondson reports that at Manor Mill Lodge, Dundrum, Co. Dublin, the rainfall was 3.45 inches on 16 days. The maximal fall in 24 hours was 1.44 inches on the 14th, on which day a severe thunderstorm raged almost continuously from 6.30 to 11.30 p.m. The mean shade temperature was 61.4°, the range being from 81° on the 14th to 47° on the 17th.

Dr. Arthur S. Goff reports that at Belfort House, Dundrum, Co. Dublin, rain fell on 19 days to the amount of 3.66 inches, the greatest daily fall being 1.30 inches on the 14th. The temperature in the shade ranged from 82° on the 14th to 48° on the 17th. The mean temperature in the shade was 62.4°. Thunder was heard on the 2nd, and several storms of thunder

and lightning passed over the Dundrum district on the evening and in the night of the 14th.

According to Mr. W. J. M'Cabe, the observer for the Right Hon. Laurence Waldron, at Marino, Killiney, Co. Dublin, 2.85 inches of rain fell on 15 days. The maximal fall in 24 hours was 1.20 inches on the 14th. The average rainfall at Cloneevin, Killiney, in August of the twenty-four years, 1884–1907, was 3.212 inches on 16.8 days.

According to Dr. J. H. M. Armstrong, at Coolagad, Greystones, Co. Wicklow, the rainfall was 3.35 inches on 16 days. The heaviest fall in 24 hours was 1.07 inch on the 14th. The total fall since January 1 amounts to 20.52 inches on 127 days. A thunder shower occurred at 12 noon of the 2nd. Thunder was heard at 9 50 a.m. of the 14th, and thunderstorms followed at 6 55 p.m. and 10 p.m. of the same day.

At Auburn, Greystones, Co. Wicklow, Miss F. Ross Todd recorded a rainfall of 2.875 inches on 16 days. The greatest measurement in 24 hours was .86 inch on the 14th. On the 25th and again on the 29th also .54 inch was recorded.

At the Royal National Hospital for Consumption for Ireland, Newcastle, Co. Wicklow, Dr. Charles Denys Hanan, M.D., Resident Medical Officer, reports that rain fell to the amount of 2.49 inches on 14 days, the greatest daily rainfall being .50 inch on the 25th. The screened thermometers rose to 75° on the 13th, and fell to 48° on the 5th, 12th and 17th. The mean maximal temperature was 66.0°, the mean minimal temperature was 52.0°, and the mean temperature was 59.0°.

The Rev. Arthur Wilson, M.A., returns the rainfall at the Rectory, Dunmanway, Co Cork, at 6.15 inches on 22 days. The largest measurements in 24 hours were 1.17 inches on the 23rd ; 1.12 inches on the 7th ; .67 inch on the 22nd, and .65 inch on the 25th. On the whole the month was warm and damp with heavy rain on the days named. It was very fine and bright from the 10th to the 18th inclusive, with the exception of the 14th. On the morning of that day .14 inch of rain fell, and in the evening there was brilliant sheet lightning from 9 to 12 midnight. The rainfall in 1914 to August 31st has been 41.96 inches, or 6.31 inches more than the average for the first eight months of the year.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Microscopic Stains.

All workers with the microscope will be interested to learn of the addition of toluidine blue to the list of ' Soloid ' Microscopic Stains. Not only is this stain of value bacteriologically as a positively diagnostic stain for *B. diphtheriæ*, but it is also useful as a general histological stain. ' Soloid ' Toluidine blue possesses all the excellent qualities of its predecessors issued under the same brand. To the worker who prefers to make up fresh solutions each time he requires a stain, these products are invaluable. This soloid is issued in tubes of six by Messrs. Burroughs Wellcome & Co., London.

A Handy Culture Medium.

The importance of various moulds, &c., as causative agents in certain diseases, particularly those of tropical origin, calls for consideration of the life and growth of these minute vegetable organisms. As is well-known, Sabouraud's Medium is one of the best media for growing trichophyta, moulds and similar organisms, and the issue of this preparation as a dry product will be welcomed. In ' Soloid ' Sabouraud's Medium, issued by Burroughs Wellcome & Co., a decided want has been met. It is possible by means of this product to make in about 10 minutes' time a small supply of the medium sufficient for all ordinary purposes. For those who do not require large quantities this method of making media is ideal. The products take up little space, keep practically indefinitely and are quickly converted into the ordinary clear, firm medium. The organisms of favus and ring-worm and the " bottle bacillus " all grow well on this medium, and it is recommended for the use of those who, not having the resources of a laboratory at their disposal, would otherwise find the occasional preparation of Sabouraud's medium a somewhat tedious and probably wasteful operation. It is issued in tubes of six by Messrs. Burroughs Wellcome & Co., London.

PART IV.

MEDICAL EDUCATION AND EXAMINATIONS IN IRELAND.

1914–1915.

Medical students in Ireland, as elsewhere, have in the first instance to choose between University Degrees and Non-University Qualifications or Diplomas. Should they elect to try for a University Degree, their choice must lie between the University of Dublin, which requires a Degree in Arts before registrable Degrees in Medicine, Surgery, and Midwifery are conferred; the National University of Ireland, which—while not requiring an Arts Degree—requires all students to pass a Matriculation Examination in Arts, before a candidate enters upon the curriculum in the three branches of medicine already mentioned—Medicine, Surgery, and Midwifery; and the Queen's University of Belfast, in which also a Matriculation Examination in Arts is required. Under the Regulations of the School of Physic in Ireland considerable Professional Privileges are afforded to medical students in regard to the Arts Curriculum of the University of Dublin.

Outside the Universities, the chief Licensing Bodies are the Royal Colleges of Physicians and Surgeons. The position of the Apothecaries' Hall of Dublin as a Licensing Corporation under the Medical Act of 1886 has been defined by the appointment of Examiners in Surgery by the General Medical Council at the bidding of His Majesty's Privy Council.

The Royal Colleges of Physicians and Surgeons are in a position to give a first-class working qualification in Medicine, Surgery, and Midwifery—a qualification which is registrable under the Medical Acts, which is universally recognised as one of high merit, and the possession of which is attended by no

disabilities, such as preventing its possessor from dispensing medicines or keeping open shop for the sale of medicines, if he is legally qualified to do so.

The Medical Schools in Ireland are—(1.) The School of Physic in Ireland, Trinity College, Dublin; (2.) The Schools of Surgery of the Royal College of Surgeons in Ireland (including the Carmichael College of Medicine and the Ledwich School of Medicine); (3.) The University College Medical School, Cecilia-street, Dublin; (4.) The Faculty of Medicine, Queen's University of Belfast; (5.) The School of Medicine, University College, Cork; and (6.) The School of Medicine, University College, Galway.

Facilities for Clinical Instruction in fully-equipped Medico-Chirurgical Hospitals exist in Dublin, Belfast, Cork, and Galway; but, as a rule, the Schools of Medicine in Ireland are not attached to a given hospital, or *vice versâ*, as is the case in London and other large centres of medical education. The student will, however, have little difficulty in selecting a hospital, in the wards of which he will receive excellent bedside teaching and have ample opportunity of making himself familiar with the aspect and treatment of disease.

The detailed information which follows is authentic, being taken directly from the published calendars of the respective licensing bodies.

REGULATIONS PRESCRIBED BY THE GENERAL MEDICAL COUNCIL.

With regard to the course of Study and Examinations which persons desirous of qualifying for the Medical Profession shall go through in order that they may become possessed of the requisite knowledge and skill for the efficient practice of the Profession, the General Medical Council have resolved that the following conditions ought to be enforced without exception on *all* who commence their Medical Studies at any time after Jan. 1, 1892:—

(*a.*) The period of Professional Studies, between the date of Registration as a Medical Student and the date of Final Examination for any Diploma which entitles its bearer to be registered under the *Medical Acts*, must be a period of *bonâ fide* study during not less than five years. For the purpose of this require-

ment the close of the fifth year may be reckoned as occurring at the expiration of fifty-seven months from the date of registration.

(*b.*) In every course of Professional study and Examinations, the following subjects must be contained:—

(I.) Physics, including the Elementary Mechanics of Solids and Fluids, and the Rudiments of Heat, Light, and Electricity.
(II.) Chemistry, including the principles of the Science, and the details which bear on the study of Medicine.
(III.) Elementary Biology.
(IV.) Anatomy.
(V.) Physiology.
(VI.) Materia Medica and Pharmacy.
(VII.) Pathology.
(VIII.) Pharmacology and Therapeutics.
(IX.) Medicine, including Medical Anatomy and Clinical Medicine.
(X.) Surgery, including Surgical Anatomy and Clinical Surgery.
(XI.) Midwifery, including Diseases peculiar to Women and to New-born Children. [By a recent decision of the General Medical Council the study of (XI.) must not commence till the student has held the posts of Clinical Clerk and Surgical Dresser.]
(XII.) Theory and Practice of Vaccination.
(XIII.) Forensic Medicine.
(XIV.) Hygiene.
(XV.) Mental Disease.
(XVI.) Anæsthetics.

The General Medical Council considers that the Regulations of the Examining Bodies should be so framed as to ensure that the study of the Final Group of Subjects (VII. to XVI. above) shall extend over a period of not less than twenty-four months after the passing of the Examination in Anatomy and Physiology.

The first four of the five years of Medical Study should be passed at a School or Schools of Medicine recognised by any of the Licensing Bodies, provided that the First Year may be passed at a University, or at a Teaching Institution, recognised by any of the Licensing Bodies and approved by the Council, where the subjects of Physics, Chemistry, and Biology are taught.

A student who has, previous to registration, attended a course or courses of study in one or all of the subjects, Physics, Chemistry, or Biology, in any University, School of Medicine, or Teaching Institution recognised by any of the Licensing Bodies, may without further attendance be admitted to examination in these subjects.

A graduate in Arts or Science of any University recognised by the General Medical Council, who has spent a year in the study of Physics, Chemistry and Biology, and has passed an examination in these subjects for the degrees in question, is held to have completed the first of the five years of medical study.

Six months instruction or more in the Preliminary Sciences at a Teaching Institution (other than a Medical School) recognised by one of the Licensing Bodies and approved by the Council may count as six months, and no more, of the Curriculum of Professional Study, provided such instruction is subsequent to the date of passing the required Preliminary Examination in general education.

The Examinations in the Elements of Physics, Chemistry, and Biology should be passed before the beginning of the Second Winter Session.

The General Medical Council considers that no Qualification in Medicine ought to be granted without evidence of Clinical Instruction in Infectious Diseases.

I.

University of Dublin.

DEGREES AND DIPLOMAS IN MEDICINE, SURGERY, AND MIDWIFERY; AND IN DENTISTRY.

The Medical School of the University of Dublin has for its official title the name of The School of Physic in Ireland. It is officered by University Professors and Examiners and by four King's Professors appointed by the President and Fellows of the Royal College of Physicians of Ireland, acting as Trustees of the Estate of Sir Patrick Dun.

Matriculation.

Students cannot be permitted to attend any of the Courses of Instruction in the School of Physic in Ireland until they have Matriculated. There is no special Examination; the Public Entrance and Term Examinations of Trinity College, or any other of the Preliminary Examinations recognised by the General Medical Council, being accepted as equivalent. The Matriculation Fee is Five Shillings. It is not necessary for Students to have their names on the College Books, or to attend any of the Academical duties of the University, unconnected with the School of Physic, unless they desire to obtain a Diploma or Degree in Medicine.

Surgery and Midwifery, or a Degree in Dental Science of the University of Dublin.

Students may matriculate at the commencement of either the Winter or the Summer Session. The Winter Session commences on October 1st, 1914, and the Summer Session on April 13th, 1915.

WOMEN STUDENTS.

Women Students are admitted to the Degrees and Diplomas in Medicine, Surgery, and Midwifery, on the same conditions as men. A special Anatomical Department, with dissecting-room and reading-room, is provided for their accommodation.

QUALIFICATIONS.

The Qualifications in Medicine, Surgery, and Midwifery, and in Dental Science, granted by the University are as follow:—

The Degrees are:—

1. Bachelor in Medicine.
2. Bachelor in Surgery.
3. Bachelor in Obstetric Science.
4. Doctor in Medicine.
5. Master in Surgery.
6. Master in Obstetric Science.
7. Bachelor in Dental Science.
8. Master in Dental Science.

The Diplomas are:—

1. Diploma in Public Health (formerly Qualification in State Medicine).
2. Diploma in Medicine.
3. Diploma in Surgery.
4. Diploma in Obstetric Science.

FINAL MEDICAL EXAMINATION.—PART I.

The subjects are—Pathology, Materia Medica and Therapeutics, Medical Jurisprudence and Hygiene.

Before they are admitted to the Examination, Students must have attended the prescribed Courses of Study, passed the Intermediate Medical Examination, Part II., and paid the *Liceat* Fee (£5).

Vaccination (Fee, £1 1s.) should be taken out in the fourth year.

FINAL MEDICAL EXAMINATION.—PART II.

The subjects are—(*a*) Medicine, Clinical Medicine, and Mental Disease; (*b*) Surgery, Clinical Surgery, Surgical Operations, and Ophthalmic Surgery; (*c*) Midwifery and Gynæcology (clinical, papers, and *vivâ voce*).

Candidates for the Final in Surgery will be required to produce a certificate of instruction and practice in the administration of general Anæsthetics.

Students may present themselves for Examination in any of these groups (*a*), (*b*) or (*c*), separately or together, at any of the Examinations during their Fifth Year; but they must leave at least one of these groups until the end of their Fifth Year. Before presenting themselves for any of these groups, Students must have attended all the prescribed Courses of Instruction in the subject in which they present themselves for Examination, and paid the *Liceat* Fee (£5). Candidates in any group who fail to satisfy the Clinical Examiners are not permitted to proceed with the other parts of the Examination in which they have failed.

TOTAL EXPENSES OF THE REQUIRED COURSES.

I. Lectures	£67	4	0
II. Hospitals	55	13	0
III. Degrees (M.B., B.Ch., B.A.O.) ..	27	0	0
TOTAL ..	£149	17	0

UNIVERSITY DIPLOMAS.

Candidates for the Diplomas in Medicine, Surgery, and Obstetric Science must be matriculated in Medicine, and must have completed two years in Arts, and five years in Medical Studies.

The dates, regulations, and subjects of Examination are the same as for the Degrees.

Diplomates on completing the Course in Arts, and proceeding to the Degree of B.A., may be admitted to the Degree of Bachelor on paying the Degree Fees.

The *Liceat* fees are the same as for the Finals.

Candidates who have completed the prescribed Courses of study and passed all the Examinations will be entitled, if Graduates in Arts, to have conferred on them the Degrees of M.B., B.Ch., B.A.O., on payment to the Senior Proctor of the Degree Fees amounting to £17. A corresponding regulation applies to

the Diplomas, the Fees for which are £11. They will also obtain from the Senior Proctor a Diploma entitling them to be entered on the Register of Medical Practitioners under the Medical Act, 1886.

DIPLOMA IN PUBLIC HEALTH OR STATE MEDICINE.

In the year 1870 a "Diploma in State Medicine" was instituted by a resolution of the Board of Trinity College. In 1898 it was resolved that the title of the "Diploma in State Medicine" be changed to that of "Diploma in Public Health."

The Diploma in Public Health is conferred, after examination, by the University of Dublin, upon Candidates fulfilling the conditions required by the General Medical Council.

II.

The National University of Ireland.

THE MATRICULATION EXAMINATION.

This Examination will be held in Dublin, and at certain local Centres selected by the Senate.

DEGREES OF M.B., B.Ch., AND B.A.O.

Printed Forms of application for admission to any Medical Examination may be had from "The Registrar, The National University of Ireland, Dublin."

Each Candidate must send to the Registrar a printed Form of Application for admission, *accurately filled up and signed by the Candidate*, together with the prescribed fee.

THE M.D. DEGREE.

Candidates may present themselves for the Examination for this Degree after an interval of three academical years from the time of obtaining the M.B., B.Ch., B.A.O. Degrees; but in the case of Candidates who shall have obtained a degree of the University in the Faculty of Arts, an interval of two academical years shall be sufficient.

Printed Forms of application for admission to this Examination may be had from "The Registrar, The National University of Ireland, Dublin."

Candidates at this Examination must answer in the following subjects :—

I. Medicine.
II. Pathology.

The Examination in each subject consists of :—

(*a*) A Written Examination.
(*b*) An Oral Examination.

In addition every Candidate must diagnosticate at the bedside at least three Medical cases, and prescribe treatment. He must also write detailed reports on at least two cases to be selected by the Examiners, and discuss the questions arising thereon.

THE M.Ch. DEGREE.

Candidates may present themselves for the Examination for this Degree after an interval of three academical years from the time of obtaining the M.B., B.Ch., B.A.O. Degrees; but in the case of Candidates who shall have obtained a degree of the University in the Faculty of Arts, an interval of two academical years shall be sufficient.

Printed Forms of application for admission to this Examination may be had from "The Registrar, The National University of Ireland, Dublin."

Candidates at this Examination must answer in the following subjects :—

I. Surgery, Theoretical and Practical, including Ophthalmology and Otology.
II. Surgical Pathology.
III. Surgical Anatomy and Operative Surgery, with the use of Surgical Instruments and Appliances.

As far as practicable, there will be a Written and an Oral Examination in these branches, and in addition every Candidate will be required to diagnosticate at the bedside at least three Surgical cases, and prescribe treatment. He must also write detailed reports on at least two cases, to be selected by the Examiners, and discuss the questions arising thereon.

THE M.A.O. DEGREE.

Candidates may present themselves for the Examination for this Degree after an interval of three academical years from the

time of obtaining the M.B., B.Ch., B.A.O. Degrees; but in the case of Candidates who shall have obtained a degree of the University in the Faculty of Arts, an interval of two academical years shall be sufficient.

Printed forms of application for admission to this Examination may be had from "The Registrar, The National University of Ireland, Dublin."

Candidates at this Examination must answer in the following subjects:—

I. Midwifery.
II. Diseases of Women and Children.
III. Pathology.
IV. The use of Instruments and Appliances.

The Examination in each subject consists of—

(*a*) An Oral Examination, with practical illustrations, including use of instruments and appliances.
(*b*) A Written Examination.
(*c*) A Clinical Examination, as far as practicable.

The Medical Regulations set out above refer only to those Students of the late Royal University of Ireland who, after the dissolution of that University, registered as Students of the National University of Ireland; they form only a portion of the Medical Regulations of the National University of Ireland. All Medical Students of the latter University, except those of the late Royal University of Ireland aforesaid, must enter one of the Constituent Colleges and go through their courses under the College Regulations. Each College holds its own Examinations, but an Extern Examiner, appointed by the Senate of the University, is associated with the College Professor in the conduct of the Examination in each subject. All particulars about the Examinations will be found in the calendars of the Constituent Colleges.

QUALIFICATIONS IN STATE MEDICINE.

This University grants a Diploma in Public Health and the Degrees of B.Sc. and D.Sc. in Public Health. The Diploma may be granted to matriculated students of the University who shall have completed approved courses of study, and shall have passed the prescribed Examination, provided that it shall not be granted except to a Registered Medical Practitioner.

III.

The Queen's University of Belfast.

DEGREES IN THE FACULTY OF MEDICINE.

Statutes.

1. There shall be six degrees of the University in the Faculty of Medicine, viz. :—

Bachelor of Medicine (M.B.),
Bachelor of Surgery (B.Ch.),
Bachelor of Obstetrics (B.A.O.),
Doctor of Medicine (M.D.),
Master of Surgery (M.Ch.), and
Master of Obstetrics (M.A.O.).

2. The degrees of M.B., B.Ch., and B.A.O. shall be the primary degrees in the Faculty of Medicine, and shall be conferred at the same time and after the same course of study. No student shall be admitted to the final Examination for these degrees until he has shown (1) that he is a Matriculated Student of the University, (2) that he has completed the prescribed course of study in the Faculty of Medicine extending over a period of not less than five academic years from the date of his registration as a Student of Medicine by the General Council of Medical Education and Registration of the United Kingdom, and (3) that he has passed the several examinations prescribed.

3. The Senate shall not confer the primary degrees in the Faculty of Medicine upon any person who has not attended in the University during three academic years at least the courses of study prescribed for such degrees. The Senate may accept, for not more than two academic years of the required five, courses of study pursued in any other University or School of Medicine approved by the Senate.

4. Every candidate for the primary degrees in Medicine shall be required to show that he has attained the age of twenty-one years on or before the day of graduation.

5. The degrees of M.D., M.Ch., M.A.O. shall not be conferred, nor shall any of them, until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science, of at least two academic years after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in the interval he has pursued such courses of study or been engaged in such practical work as may be prescribed. Any of these degrees may be conferred by the Senate either (*a*)

after an examination or (*b*) on the submission of a thesis or other evidence of original study or research to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof.

THE DEGREE OF DOCTOR OF MEDICINE.

Regulations.

1. The Degree of Doctor of Medicine shall not be conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science, of at least two academic years after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in the interval he has pursued such courses of study, or been engaged in such practical work as may be prescribed. This Degree may be conferred by the Senate either (*a*) after an examination, or (*b*) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof.

2. The subjects of the examination under (*a*) shall be :—

The Principles and Practice of Medicine, and one other special subject to be selected by the candidate.

The special subjects shall be as follows :—

i. Human Anatomy, including Embryology.
ii. Physiology.
iii. Pathology
iv. Pharmacology and Therapeutics.
v. Sanitary Science and Public Health.
vi. Forensic Medicine and Toxicology.
vii. Mental Diseases.

The examination in Medicine shall include :—

(*a*) A written paper.
(*b*) A commentary upon a selected clinical case or cases.
(*c*) A clinical and *vivâ voce* examination.

The examination in the Special Subjects shall include :—

(*a*) A written paper.
(*b*) A clinical *or* practical and *vivâ voce* examination.

THE DEGREE OF MASTER OF SURGERY.

Regulations.

1. The Degree of Master of Surgery shall not be conferred until the expiration of at least three academic years, or in the case of

graduates of the University in Arts or Science, of at least two academic years after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in the interval he has pursued such courses of study or been engaged in such practical work as may be prescribed. This Degree may be conferred by the Senate either (*a*) after an examination, or (*b*) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof.

2. The subjects of the examination under (*a*) shall be:—

(1) Surgery, Theoretical and Practical, including Ophthalmology and Otology.

(2) Surgical Pathology.

(3) Surgical Anatomy and Operative Surgery, with the use of Surgical Instruments and Appliances.

There shall be both written and oral examinations in these branches, and a clinical examination upon selected surgical cases.

THE DEGREE OF MASTER OF OBSTETRICS.

Regulations.

1. The Degree of Master of Obstetrics shall not be conferred until the expiration of at least three academic years, or in the case of graduates of the University in Arts or Science, of at least two academic years after admission to the primary degrees in the Faculty of Medicine. Every candidate must show that in the interval he has pursued such courses of study or been engaged in such practical work as may be prescribed. This Degree may be conferred by the Senate either (*a*) after an examination, or (*b*) on the submission of a thesis or other evidence of original study or research, to be approved by the Faculty of Medicine after an oral or other examination of the candidate on the subject thereof.

2. The subjects of the examination under (*a*) shall be:—

(1) Midwifery.

(2) Diseases of Women and Children.

(3) Pathology in its special bearing on Midwifery and Diseases of Women and Children.

The examination shall consist of:—

(1) A written examination.

(2) A clinical examination.

(3) An oral examination with practical illustrations, including those of instruments and appliances.

THE DIPLOMA IN PUBLIC HEALTH.

Statute.

The Senate may confer Diplomas in Public Health upon legally qualified medical practitioners who have pursued such courses of study and passed such examinations as may be prescribed: Provided always that the Regulations for such study and examinations are in accordance with the rules made from time to time by the General Council of Medical Education and Registration of the United Kingdom.

Examinations.

Two examinations will be held yearly, each will consist of two parts. Candidates may present themselves for either part separately, or for both parts together at their option.

A pamphlet giving all necessary information regarding entrance, examinations, lectures, fees, scholarships, prizes, &c., may be obtained on application to the Secretary of the University.

IV.

Royal Colleges of Physicians and Surgeons, Ireland.

REGULATIONS FOR THE EXAMINATIONS IN MEDICINE, SURGERY, AND MIDWIFERY REQUIRED FOR REGISTRATION UNDER THE MEDICAL ACT, 1886.

These Regulations are obligatory on all Candidates commencing their Studies on or after October 1st, 1902.

Preliminary Examination.

REGULATIONS.

The following are the subjects of Examination :—

I. Latin.

II. Any one of the following languages :—Greek, French, German, Italian, Irish, Dutch, Spanish, or any other modern language approved by the Board of Examiners.

III. English.

IV. Elementary Mathematics.

The Candidate, when entering his name, is required to state in what Language selected from II., and in what Authors he desires to be examined.

If he desires to be examined in Dutch, he must send, at least a

month before the Examination, notice of the portions of the Dutch Authors he has selected.

1. The following works are prescribed in English till December 31st, 1914 :—

(*a*) *Macaulay*	-	Biography of Goldsmith.
(*b*) *Tennyson*	-	Ulysses; Tithonus; Dream of Fair Women.
(*c*) *Lowell*	-	From my Study Windows—A Good Word for Winter.

2. Grammar.
3. Paraphrase.
4. History and Geography.
5. Essay.

The Examination in Mathematics embraces *Arithmetic. Algebra*—Definitions and Explanations of Algebraical Signs and Terms. Addition, Subtraction, Multiplication, and Division. Simple Equations in one unknown quantity. Easy Problems. *Geometry*—The subjects covered by Euclid, Books 1, 2, 3; and Book 4, Propositions 1, 2, 3, 4 and 5, with some additional Elementary Practical Constructions, and some Elementary *loci*. Geometrical methods other than those followed by Euclid will be accepted, such as regarding tangents as limiting positions of chords, &c. Candidates are required to provide themselves with a ruler, set square, protractor, and pencil compasses.

N.B.—Candidates are reminded that great importance is attached to unprescribed translation, and to composition, at all Examinations of which these subjects form a part. Preparation of the prescribed authors alone will not secure Pass marks.

The Examination shall be conducted entirely by written papers.

"Typical Examination Papers," price 6d., post free 6½d., may be obtained on application to the Secretary.

MARKS

Marks shall be allotted as under :—

Latin	120 marks.
English	180 ,,
Greek, or alternative language	120 ,,
Mathematics	120 ,,

1. Candidates who pass in all subjects, and are awarded seventy per cent. of the total marks obtainable, are placed in a separate list, and are considered to have passed with "Honours."

2. A Candidate may get credit for every subject in which he

obtains pass marks, provided he passes in all four subjects at not more than two Examinations. He can offer himself for re-examination as often as may be necessary to satisfy this condition.

3. Candidates who hold the complete Pass Certificate of the Senior Grade of the Intermediate Education Board of Ireland may complete the Preliminary Examination under the Conjoint Board by passing in any subject or subjects required by the General Medical Council which are not passed at the Intermediate Examination.

4. The fee for the first admission of a Candidate to the Examination shall be Two Guineas. Fee for each subsequent admission One Guinea.

Proof of Age.

No Candidate shall be admissible to the Preliminary Examination who does not produce evidence of having attained the age of sixteen years on or before the first day of the Examination.

Date of Preliminary Examinations for 1914 and 1915.

Wednesdays—October 7th, 1914; March 10th, 1915; June 16th and October 6th, 1915.

The Examinations are held at the Royal College of Physicians, Kildare Street, Dublin, commencing each day at 10 a.m.

Preliminary Examinations accepted by the Colleges.

All Examinations in General Education recognised by the General Medical Council (a list of which will be found in the Register of Medical Students) are accepted by the Colleges in lieu of the Preliminary Examination held by them. Information as to such Examinations may be obtained at the Branch Medical Council Office, 35 Dawson Street, Dublin.

PROFESSIONAL EXAMINATIONS.

Every Candidate is required to pass four Professional Examinations.

Candidates will be admissible to the various Examinations as under :—

First Professional Examination, not earlier than the end of the first winter session. (Fee is £15 15s.)

Second Professional Examination, not earlier than the end of the second winter session. (Fee is £10 10s.)

Third Professional Examination, not earlier than the end of the third year of medical study. (Fee is £9 9s.)

Final Professional Examination, not earlier than the end of the fourth year of medical study; but it cannot be completed till the end of the fifth year of medical study.

No Candidate shall be admitted to any Examination within three months of his rejection in the subjects of that Examination by this or any other Licensing Body.

FINAL PROFESSIONAL EXAMINATION.

The Fee for this Examination is £6 6s.

The subjects of the Final Professional Examination are :—

Division A.—Medicine, including Fevers, Mental Diseases, and Diseases of Children.

Division B.—Surgery, including Operative Surgery and Ophthalmic Surgery.

Division C.—Midwifery and Gynæcology, Vaccination, and Diseases of New-born Children.

Before admission to the Final Professional Examination, every Candidate must have passed in the subjects of the Third Professional Examination.

Candidates are recommended to present themselves in all the subjects of the Final Examination at one time; but a Candidate at or after the end of the fourth year may present himself in any one of the Divisions A, B, or C, provided he has completed his Curriculum as far as concerns the Division in which he presents himself. The Examination in at least one of the Divisions must be deferred till the end of the fifth year.

Before completing the Final Examination a Candidate must have passed four years in Medical Studies other than those for the First Professional Examination.

Candidates must have passed in all the subjects of the Final Examination before any Diploma can be granted.

Each Candidate before receiving his Diplomas must produce a Registrar's Certificate, or other satisfactory evidence, that he has attained the age of twenty-one years.

EXEMPTIONS.

Candidates who have passed in any of the required subjects at Examinations conducted by any Licensing Body recognised by the Royal College of Physicians and the Royal College of Surgeons may, at the discretion of the Committee of Management, be exempted from further examination in such subjects under these regulations.

REGULATIONS FOR CANDIDATES FOR THE DIPLOMA IN PUBLIC HEALTH.

Stated Examinations for the Diploma in Public Health commence on the first Monday of the months of February, May, July, and November.

A special Examination for the Diploma may, at the discretion of the Committee of Management, be obtained—except during the months of August and September—on application at least one fortnight before the date of the proposed Examination, and payment of £15 15s. in addition to the ordinary Fees mentioned below.

Every Candidate for the Diploma in Public Health must be a Registered Medical Practitioner. He must return his name to the Secretary of the Committee of Management under the Conjoint Scheme, Royal College of Physicians, Dublin, one fortnight before the Examination, and lodge with him a Testimonial of Character from a Fellow of either of the Colleges, or of the Royal Colleges of Physicians or Surgeons of London or Edinburgh, together with certificates of the prescribed course of study.

Candidates registered as Medical Practitioners or entitled to be so registered after January 1st, 1890, must comply with certain Resolutions and Rules, adopted by the General Medical Council.

The Fee for the Examination is Ten Guineas, which must be lodged in the Ulster Bank, Dublin, to the credit of the Committee of Management. Fees are not returned to any Candidate who withdraws from, or is rejected at, any Examination. The Fee for re-examination is Five Guineas.

The Examination for the Diploma in Public Health comprises the following subjects:—Chemistry and Physics, Engineering and Architecture, Meteorology, Sanitary Law, Vital Statistics, Hygiene, Bacteriology.

V.

Apothecaries' Hall of Dublin.

The Primary, Intermediate and Final Examinations are held four times a year—viz., commencing the first Monday in January, April, July, and October.

The Final Examinations are held quarterly.

The Fees payable for each Examination are as follow:—

Primary Professional	..	..	£5 5 0
Intermediate „	..	..	10 10 0
Final Examination	..	..	15 15 0

A Candidate is allowed for each Professional Examination which he has completed at any other Licensing Body, except the Final.

Ladies who comply with the regulations will be admitted to these examinations.

Candidates may be admitted to a Special Examination, under special circumstances, which must be laid before the Examination Committee. If the Candidate's application be granted, an extra fee of Ten Guineas over and above the full fee is required.

Candidates already on the Register will receive the Diploma of the Hall on passing an Examination in Medicine, Materia Medica and Pharmacy.

Each Candidate, before receiving his Diploma, must produce evidence that he has attained the age of twenty-one years.

Licentiates of this Hall are entitled to enter as Candidates for the Fellowship of the Edinburgh Royal College of Surgeons.

All information relative to the Examinations may be obtained from the Registrar of the Apothecaries' Hall, 40 Mary Street, Dublin.

VI.

Dental Education and Examinations in Ireland.

UNIVERSITY OF DUBLIN.

DEGREES IN DENTAL SCIENCE.

Combined Arts and Dental Curriculum.

The University of Dublin grants the degrees of Bachelor and Master in Dental Science.

Either of these qualifications entitles the holder to be registered as a licensed Dental Practitioner.

In order to obtain the Degree of Bachelor (B. Dent. Sc.), Candidates must have completed the course for the Arts Degree (B.A.) of the University and have spent at least four years in the School of Dentistry. The Degree of Master in Dental Science (M. Dent. Sc.) is awarded after a further examination, and cannot be taken until the end of a fifth year of study.

The Dental and Arts Courses may be taken separately or concurrently.

The Degree of Bachelor in Dental Science is conferred on Students who have completed the required Courses and Examinations, and passed in Ethics and English Composition at an ordinary examination for the B.A. Degree.

The total fees in order to obtain the degree of Bachelor in Dental Science are:—

Entrance fee, Arts fees (4 years), and fee for B.A. Degree	£83	4	0
Lectures, Laboratory, and Hospital fees	186	18	0
Examination fee	5	0	0
Fee for Degree	10	0	0
	£285	2	0

As regards Dental Hospital practice, full information is contained in the Calendar of the School of Dentistry in connection with the Incorporated Dental Hospital of Ireland, Lincoln Place, Dublin. The Calendar may be obtained on application to the Dean.

MASTER IN DENTAL SCIENCE.

Candidates for the Degree of Master in Dental Science must be Bachelors in Dental Science of at least one year's standing. They will be required to pass an examination in Pathology and Bacteriology, and either to carry out Dental work of an advanced character to the satisfaction of the Examiners, or to present a thesis to be approved of by them, giving evidence of original research on some subject connected with Dentistry.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

DIPLOMA IN DENTAL SURGERY.

The Royal College of Surgeons in Ireland grants Diplomas in Dental Surgery under revised conditions adopted by the Council on November 25, 1909, of which the following is a synopsis:—

The Candidate must be twenty-one years of age before being granted the Diploma.

The Candidate must have passed three Examinations.

1. Preliminary (identical with the Medical Preliminary).
2. First Dental. (This Examination is much the same as the Second Conjoint Professional.)
3. Final Dental Examination. Candidates are examined in General Pathology, Medicine and Surgery; Dental Surgery, and Dental Pathology, with the Materia Medica and Therapeutics applicable to Dental Surgery; Dental Mechanics and Metallurgy; Orthodontia.

Large reductions in the Special Certificates required are made in the cases of qualified Medical Practitioners.[a]

[a] Fuller particulars can be obtained by application to the Registrar, Royal College of Surgeons, St. Stephen's Green, Dublin.

PERISCOPE.

NATIONAL RELIEF FUND.

THE terrible war in which Great Britain and Ireland have been compelled to take part through regard for the national honour and in defence of the rights and liberties of the British Empire must necessarily entail much suffering not only on our brave sailors and soldiers but also on their wives and children. In a noble and patriotic effort to lessen the effects of that suffering, H. R. H. The Prince of Wales has started a National Relief Fund. Every citizen should esteem it not only a duty but a privilege to aid this fund to the best of his or her ability. The Prince of Wales is the Treasurer of the Fund, and the Joint Secretaries are C. Arthur Pearson, Hedley F. Le Bas, and Sir Frederick Ponsonby, K.C.V.O., C.B. All remittances, with the subjoined coupon, should be addressed to H. R. H. The Prince of Wales, Buckingham Palace, London, S.W. These and other letters to the Fund need not be stamped.

I enclose £ *s.* *d. toward the Prince of Wales's*

NATIONAL RELIEF FUND.

Name .....

Address .....

.....

This coupon should be filled in, and the envelope, which need not be stamped, addressed to H.R.H. The Prince of Wales, Buckingham Palace, London.

THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE.

NOVEMBER 2, 1914.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XIV.—*Radium.*[a] By J. JOLY, Sc.D., F.R.S.; Professor of Geology and Mineralogy in the University of Dublin.

IT has been unfortunate for the progress of the radio-active treatment of disease that its methods and claims involve much of the marvellous. Up till recently, indeed, a large part of radio-active theraputics could only be described as bordering on the occult. It is not to be wondered at that when, in addition to its occult and marvellous characters, claims were made on its behalf which in many cases could not be supported, many medical men came to regard it with a certain amount of suspicion.

To-day, I believe, we are in a better position. I think it is possible to ascribe a rational scientific basis to its legitimate claims, and to show that in fact, in radio-active treatment we are pursuing methods which have been already tried extensively and found to be of definite value; and that new methods differ from the old mainly in their power and availability and little, or not at all, in kind.

[a] A Lecture to Post-graduate Students of Medicine delivered in the School of Physic in Ireland, Trinity College, Dublin, on Friday, October 2nd, 1914.

I shall rapidly review the basis of the science. Radium is a metallic element chemically resembling barium. It possesses, however, a remarkable property which barium does not. Its atoms are not equally stable. In a given quantity of radium a certain very small percentage of the total number of atoms present break up per second. By breaking up we mean their transmutation to another element. Radium, which is a solid element under ordinary conditions, gives rise by transmutation to a gaseous element—the emanation of radium. The new element is a heavy gas at ordinary temperatures and, like other gases, can be liquified by extreme cold. The extraordinary property of transmutation is entirely automatic. No influence which chemist or physicist can apply can affect the rate of transformation.

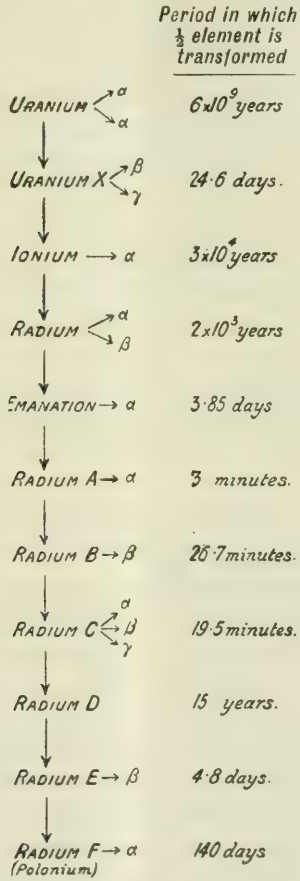
The emanation inherits the property of instability, but in its case the instability is more pronounced. A relatively large fraction of its atoms transmute per second to a solid element designated Radium A. In turn this new generation of atoms breaks up—even faster than the emanation—becoming yet another element with specific chemical properties. And so on for a whole sequence of transmutations, till finally a stable substance is formed, identical with ordinary lead in chemical and physical properties but possessing a slightly lower atomic weight.

The genealogy (p. 323) of the radium series of elements (which is not complete) shows that radium is not the starting point. It possesses ancestors which have been traced back to the element uranium.

Now what bearing has this series of transmutations upon medical science? Radium or emanation, &c., are not in the Pharmacopœia as are, say, arsenic or bismuth. The whole medicinal value of these elements resides in the very wonderful phenomena of their radiations. They radiate in the process of transmuting.

The changing atom may radiate a part of its own mass. The "alpha" ray (α-ray) is such a material ray. It is an electrified helium atom cast out of the parent atom

with enormous velocity—such a velocity as would carry it, if not impeded, all round the earth in two seconds. All alpha rays are positively electrified atoms of the element helium, which thereby is shown to be an integral constitutent of many elements. The alpha-ray is not of much


Period in which ½ element is transformed
Uranium α α 6×10⁹ years
Uranium X β γ 24·6 days.
Ionium → α 3×10⁴ years
Radium α β 2×10³ years
Emanation → α 3·85 days
Radium A → α 3 minutes.
Radium B → β 26·7 minutes.
Radium C α β γ 19·5 minutes.
Radium D 15 years.
Radium E → β 4·8 days.
Radium F → α (Polonium) 140 days

value to medical science, for in spite of its great velocity it is soon stopped by encounter with other atoms. It can penetrate only a minute fraction of a millimetre into ordinary soft tissues. We shall not further consider it.

Transmuting atoms give out also material rays of

another kind : the *β-rays.* The β-ray is in mass but a very small fraction of, even, a hydrogen atom. Its speed may approach that of light. As cast out by radio-active elements it starts with speeds which vary with the element, and may be from $\frac{1}{3}$rd to $\frac{9}{10}$th the velocity of light. The β-ray is negatively electrified. It has long been known to science as the electron. It is also identical with the cathode ray of the vacuum tube.

Another and quite different kind of radiation is given out by many of the transmuting elements :—the ***γ-ray.***— This is not material, it is æthereal. It is known now with certainty that the γ-ray is in kind identical with light, but of very much shorter wave length than even the extreme ultra-violet light of the solar spectrum. The γ-ray is flashed from the transmuting atom along with the β-ray. It is identical in character with the *x*-ray but of even still shorter wave length.

There is a very interesting connection between the γ-ray and the β-ray which it is important for the medical man to understand—as far as it is practicable on our present knowledge.

When γ-rays or *x*-rays fall on matter they give rise to β-rays. The mechanism involved is not known but it is possibly a result of the resonance of the atom, or of parts of it, to the short light waves. And it is remarkable that the γ-waves which, as we have seen, are shorter and more penetrating waves than the *x*-rays, give rise to β-rays possessed of greater velocity and penetration than β-rays excited by the *x*-rays. Indeed the β-rays originated by γ-rays may attain a velocity nearly approaching that of light and as great as that of any β-rays emitted by transmuting atoms. Again there is demonstrable evidence that β-rays impinging on matter may give rise to γ-rays. The most remarkable demonstration of this is seen in the *x*-ray tube. Here the *x*-rays originate where the stream of β- or cathode- rays are arrested on the anode. But the first relation is at present of most importance to us—*i.e.*, that the γ- or *x*- rays give rise to β-rays.

This relation gives us additional evidence of the identity of the physical effects of γ, x, and light rays—using the term light rays in the usual sense of spectral rays. For it has long been known that light waves liberate electrons from atoms. It has been found that these electrons possess a certain initial velocity which is the greater the shorter the wave length of the light concerned in their liberation. The whole science of "photo-electricity" centres round this phenomenon. The action of light on the photographic plate, as well as many other physical and chemical phenomena, find an explanation in this liberation of the electron by the light wave.

Here, then, we have spectral light waves liberating electrons—*i.e.*, very minute negatively-changed particles, and we find that as we use shorter light waves the initial velocity of these particles increases. Again, we have x-rays which are far smaller in wave length than spectral light, liberating much faster negative electrified particles. Finally we have γ-rays—the shortest æther waves of all—liberating negative particles of the highest velocity known. Plainly the whole series of phenomena are continuous.

We can now look closer at the actions involved in the therapeutic influence of the several rays and in this way, also, see further the correlation between what may be called photo-therapeutics and radio-active therapeutics.

The β-ray, whether we obtain it directly from the transforming radio-active atom or whether we obtain it as a result of the effects of the γ- or x- rays upon the atom, is an ionising agent of wonderful power. What is meant by this? In its physical aspect this means that the atoms through which it passes acquire free electric charges: some becoming positive, some negative. This can only be due to the loss of an electron by the affected atom. The loss of the small negative charge carried in the electron leaves the atom positively electrified or creates a positive ion. The fixing of the wandering electron to a neutral atom creates a negative ion. Before further consideration of the importance of the phenomenon of

ionisation we must fix in our minds that the agent which brings this about is the β-rays. There is little evidence that the γ-ray can directly create ions to any large extent. But the action of liberating high-speed β-rays results in the creation of many thousands of ions by each β-ray liberated. As an agent in the hands of the medical man we must regard the γ-ray as a light wave of extremely penetrating character, which creates high-speed β-rays at every point in the body to which it penetrates, these β-rays being most potent ionising agents. The β-rays directly obtained from radio-active atoms assist in the work of ionisation. β-rays do not penetrate far from their source. The fastest of them would not probably penetrate one centimetre in soft tissues.

We must now return to the phenomenon of ionisation. Ionisation is revealed to observation most conspicuously when it takes place in a gas. The + and − electric charges on the gas particles endow it with the properties of a conductor of electricity, the + ions moving freely in one direction and the − ions in the opposite direction under an electric potential. But there are effects brought about by ionisation of more importance to the medical man than this. The chemist has long come to recognise in the ion that he is concerned with the inner mechanism of a large number of chemical phenomena. For with the electrification of the atom attractive and repulsive forces arise. We can directly show the chemical effects of the ionising β-rays. Water exposed to their bombardment splits up into hydrogen and oxygen. And, again, the separated atoms may be in part recombined under the influence of the radiation. Ammonia splits up into hydrogen and nitrogen. Carbon dioxide forms carbon, carbon monoxide, and oxygen; hydrochloric acid forms chlorine and hydrogen. In these days recombination can also be partially effected by the rays.

We can be quite sure that within the complex structure of the living cell the ionising effects which everywhere accompany the β-rays must exert a profound influence.

The sequence of chemical events which as yet seem beyond the ken of science and which are involved in metabolism cannot fail to be affected. And it is not to be wondered at that as the result of experiment it is found that the radiations are agents which may be used either for the stimulation of the natural events of growth or used for the actual destruction of the cell. It is easy to see that the feeble radiation should produce the one effect, the strong the other. In a similar way by a moderate light stimulus we create the latent image in the photographic plate; by an intense light we again destroy this image. The inner mechanism in this last case can be quite logically stated.

There is plainly a true physical basis here for the efficacy of radio-active treatment and, what is more, we find when we examine it that it is in kind not different from that underlying treatment by special radiations. But in degree it is very different and here is the reason for the special importance of radio-activity as a therapeutic agent. The Finsen light is capable of influencing the soft tissues to but a short depth. The reason is that the wave length of the light used is too great to pass without rapid absorption through the tissues; and, further, the electrons it gives rise to—*i.e.*, the β-rays it liberates—are too slow-moving to be very efficient ionisers. X-rays penetrate in some cases quite freely and give rise to much faster and more powerful β-rays than can the Finsen light. But far more penetrating than x-rays are the γ-rays emitted in certain of the radio-active changes. These give rise to β-rays having a velocity nearly approximative to that of light.

The γ-rays are, therefore, very penetrative and powerful ionising light waves. Light waves which are quite invisible to the eye can beam right through the tissues of the body. To the mind's eye only are they visible. And a very wonderful picture they make. We see the transmuting atom flashing out this light for an inconceivably short instant as it throws off the β-ray. And: "How

far this little candle throws its beams"! Everywhere in the complex systems of the cells, atoms shaken by the rays send out β-rays; these in turn are hurled (like those dreadful war missiles we read about in our daily papers, but thousands of times faster) against other atomic systems. Fresh separations of electrons arise and new attractions and repulsions spring up and the most important chemical changes are brought about. Our mental picture can claim to be no more than diagrammatic of the reality. Still we are here dealing with recognised physical and chemical phenomena, and their description as "occult" in the derogatory sense is certainly not justifiable.

Having now briefly reviewed the nature of the rays arising in radio-active substances and the *rationale* of their influence we must turn to more especially practical considerations.

The Table given above shows that radium itself is responsible for α- and β-rays only. It happens that the β-rays emitted by radium are very "soft"—*i.e.*, slow and easily absorbed. The α-ray is in no case of more than mere surface application. Hence we see that, contrary to what is generally believed, radium itself is of little or no direct therapeutic value. Nor is the next body in succession—the emanation, for it gives only α-rays. In fact, to be brief, it is not till we come to Ra B that β-rays of a relatively high penetrative quality are reached; and it is not till we come to Ra C that γ-rays are obtained.

It is around this element, Ra C, that the chief medical importance of radio-active treatment by this family of radio-active bodies centres. Not only are β-rays of Ra C very penetrating but the γ-rays are perhaps the most energetic rays of the kind known. Further in the list there is no very special medical interest.

Now, how can we get a supply of this valuable element Ra C? We can obtain it from radium itself. For even if radium has been deprived of its emanation (which is easily done by heating it or bringing it into solution) in a

few weeks we get back the Ra C. One thing here we must be clear about. With a given quantity of Ra only a certain definitely limited amount of Ra C, or of emanation, or any other of the derived bodies, will be associated. Why is this? The answer is because the several successive elements are themselves decaying—*i.e.*, changing one into the other. The atomic percentage of each which decays in a second is a fixed quantity which we cannot alter. Now if we picture radium which has been completely deprived of its emanation, again accumulating by automatic transmutation a fresh store of this element, we have to remember :—(1) That the rate of creation of emanation by the radium is practically constant; and (2) that the absolute amount of the emanation decaying per second increases as the stock of emanation increases. Finally, when the amount of accumulated emanation has increased to such an extent that the number of emanation atoms transmuting per second becomes exactly equal to the number being generated per second, the amount of emanation present cannot increase. This is called the equilibrium amount. If fifteen members are elected steadily each year into a newly-founded society the number of members will increase for the first few years; finally, when the losses by death of the members equal about fifteen per annum the society can get no bigger. They have attained the equilibrium number of members.

This applies to every one of the successive elements. It takes twenty-one days for the equilibrium quantity of emanation to be formed in radium which has been completely de-emanated; and it takes 3.8 days for half the equilibrium amount to be formed. Again, if we start with a stock of emanation it takes just three hours for the equilibrium amount of Ra C to be formed.

We can evidently grow Ra C either from radium itself or from the emanation of radium. If we use a tube of radium we have an almost perfectly constant quantity of Ra C present, for as fast as the Ra C and intervening elements decay the Ra, which only diminishes very

slowly, in amount makes up the loss. But if we start off with a tube of emanation we do not possess a constant supply of Ra C because the emanation is decaying fairly rapidly and there is no radium to make good its loss. In 3.8 days about one half the emanation is transmuted and the Ra C decreases proportionately and, of course, with the Ra C the valuable radiations also decrease. In another 3.8 days—that is in about a week from the start—the radio-active value of the tube has fallen to one-fourth of its original value.

But in spite of the inconstant character of the emanation tube there are many reasons for preferring its use to the use of the radium tube. Chief of these is the fact that we can keep the precious radium safely locked up in the laboratory and not exposed to the thousand-and-one risks of the hospital. Then, secondly, the emanation, being a gas, is very convenient for sub-division into a large number of very small tubes according to the dosage required.

In fact the volume of the emanation is exceedingly minute. The amount of emanation in equilibrium with one gramme of radium is called the curie, and with one milligramme the millicurie. Now, the volume of the curie is only a little more than one half a cubic millimetre. Hence in dealing with emanation from twenty or forty milligrammes of radium we are dealing with very small volumes.

How may the emanation be obtained? The process is an easy one in skilled and practised hands. The salt of radium—generally the bromide or chloride—is brought into acid solution. This causes the emanation to be freely given off as fast as it is formed. At intervals we pump it off by a mercury pump.

At the Royal Dublin Society this operation has now been systematically carried on for many months, thanks to the skill and care of Mr. R. J. Ross. The Society a few days ago received an addition of over 200 milligrammes of radium bromide purchased by a fund subscribed mainly

by Lord Iveagh, Sir John Griffith, and the Society itself; others also generously supporting it.

Let us see how many millicuries we will in future be able to turn out in the week. We shall have about 130 milligrammes of the element radium. In 3.8 days we get sixty-five millicuries from this—*i.e.*, half the equilibrium amount of 130 millicuries. Hence in the week, we shall, roughly speaking, have 130 millicuries.

This is not much.—Many experts consider this little enough for one tube. But we have here in Dublin been using the emanation in a more economical and effective manner than is the usage elsewhere, so far as I know. The economy is obtained by the very simple expedient of minutely sub-dividing the dose. The system in vogue, generally, is to treat the tumour by inserting in it one or two very active tubes, containing, perhaps, up to 200 millicuries, or even more, per tube. Now these very heavily charged tubes give a radiation so intense at points close to the tube, due to the greater density of the rays near the tube, and, also, to the action of the softer and more easily absorbable rays, that it has been found necessary to stop these softer rays—both the γ and β—by wrapping lead or platinum around the tube. In this lead or platinum some thirty per cent. or more of the rays is absorbed and, of course, wasted. But in the absence of the screen actual necrosis of the tissues near the tubes results.

If, however, in place of one or two such tubes we used ten or twenty containing $\frac{1}{10}$th or $\frac{1}{20}$th of the dose, we can avail ourselves of the softer rays around each tube with benefit, Thus a wasteful loss is avoided. Moreover a more uniform "illumination" of the tissues results, just as we can illuminate a hall more uniformly by the use of many lesser centres of light than by the use of one intense centre of radiation. Also we get what is called "cross-radiation," which is found to be beneficial. The surgeon knows far better what he is doing by this method of uniform radiation, for the effects go on with approxi-

mate uniformity throughout the tumour instead of varying rapidly around a central point.

Finally, not the least of the benefit arises in the easy technique of this recent method. The quantities of emanation employed can fit in the finest capillary glass tubing and the hair-like tubes can in turn be placed in fine exploring needles. There is but little inconvenience to the patient in inserting these needles, and there is the most perfect control of the dosage in the number and strength of those tubes and the duration of exposure—facts connected with which Dr. Walter Stevenson is in a position to give you.

But, of course, applicators of various shapes and kinds are required for special purposes, and the medical man applying for emanation to the committee of the Royal Dublin Society will, doubtless, follow his own experience in the form selected and the mode of its application.

The interesting process of the extraction of the emanation from the Royal Dublin Society's stock of radium will, I am sure, be shown and explained more fully by Mr. Moss to any medical man desiring to see it. There are certain times in the week in which the operation is carried out. This—the first Radium Institute in Ireland—has already done good work for the relief of human suffering. It will have, I hope, a great future before it, for I venture, with diffidence, to hold the opinion that with increased study the applications and claims of radio-active treatment will increase.

ART. XV.—*Treatment of Graves's Disease by X-rays.* By T. GILLMAN MOORHEAD, M.D., F.R.C.P.I., Physician to the Royal City of Dublin Hospital.

EXOPHTHALMIC GOITRE is a disease concerning which, owing to its tendency to run a chronic course, its liability to remissions, and its by no means infrequent tendency to spontaneous cure, one must necessarily feel somewhat diffident when speaking of the results of any method of

treatment. Indeed, in general, some courage is now required on the part of a physician to speak to other medical men of treatment at all, as with the exception of universally recognised, well-established remedies and the particular novelty that happens to be engrossing the professional mind for the season, therapeutical measures other than surgical, however high a premium they may command amongst patients, are decidedly at a discount as far as belief in their efficacy on the part of medical men is concerned. The belief, or perhaps prayer, formerly embodied in the common termination of the old recipe, "Take this: soon you will be well," has fortunately given way to a healthy and honest scepticism, but this scepticism, I think, goes too far when, in the mouths of physiologists, it teaches the impossibility of achieving any measure of cure in any manner of disease. Such fatalism or therapeutical atheism leads to inertness, and should be replaced by agnosticism, which is willing to learn and deduce from experience.

From an abyss of expectant, even if learned, inactivity the profession has been rescued by the surgeons who, in the disease with which this short note deals and in many other fields, have stimulated medical treatment by showing that if physicians are content merely to encourage their patients to endure what cannot be cured, they must also be content to be displaced by men less conservative and more active. There has resulted, I think, a general increased activity all along the line. Medical treatment has become systematised in many diseases, and we recognise now that many conditions, which quite recently we regarded as either irrecoverable, or still more lately as recoverable only after surgical treatment, are amenable to properly applied therapy of a non-surgical nature. For this revival surgery deserves much credit, even if one does not subscribe to all the claims that it makes.

It was while endeavouring to arrive at some satisfactory method of medical treatment that might enable one to dispense with the undoubted dangers attendant on

operation that I decided, some years ago, to give a trial to *x*-rays in exophthalmic goitre. This method of treatment had been introduced first about 1904, and from my point of view seemed more likely to take the place of operation than any treatment in vogue, inasmuch as the changes to which I will shortly refer produced in the thyroid gland by the rays are to some extent comparable with the results of operation. It cannot be said that the treatment has found any general acceptance. A few papers, some favourable and others unfavourable, have appeared on the subject, but latterly *x*-rayists have shown renewed enthusiasm, and numerous good reports are now forthcoming. The actual dose of *x*-rays required seems still a matter that must be settled. It probably varies somewhat with each patient, but for the present I must leave the matter with the *x*-rayists and merely report from my own point of view the results I have observed in the few cases I have been able to submit to *x*-ray treatment.

The histological changes produced in the thyroid gland by exposure to *x*-rays have, as far as I am aware, been only incompletely worked out, and is a field of investigation worthy of research. It is, however, pretty generally admitted that a large dose of rays applied to any gland depresses the activity of that gland, and that repeated exposures lead to fibrosis. Some cases that have been operated on subsequent to an *x*-ray course have shown extensive fibrosis, more particularly of the superficial portions of the glands, and the occurrence of and of contraction of blood vessels is recognised by Kocher, who believes that a preliminary short *x*-ray course may be of advantage in diminishing risks from hæmorrhage at a subsequent operation. If fibrosis undoubtedly occurs, it appears to me obvious that results should be expected from an *x*-ray course similar to those obtained by operation. The length of time required to get the result will be, of course, greater, but the danger will be less.

Since first using the method I have obtained the treatment for nine cases only, though I have seen many more than this. This is partly owing to the difficulty in carrying out such a course in every case, and partly owing to the fact that in mild early cases I have almost invariably found that mental and physical rest alone, if carried out in a thorough manner, is sufficient to bring about a cure. I am, in fact, strongly of opinion that early recognition of the disease in its milder forms, followed by treatment, by rest and sedatives, would cure many cases which, if left alone, would develop into severe and much less curable forms.

Of the nine cases, one very severe case remained under observation for a period of three weeks only, and with the exception of lessened tachycardia was not apparently improved during that period. The remaining cases have been under observation for periods varying from five years to a few months. Two of them have been treated so recently that it is impossible to feel certain of the ultimate result, but at the present time they are both very much improved. Of the remaining six cases, five are completely cured as far as symptoms are concerned—that is, they are able to live ordinary lives, doing ordinary work, and do not suffer from palpitation, tremor, or any of the symptoms of Graves's disease. In each of them some enlargement of the thyroid can still be made out, but the enlargement is slight, and on palpation the gland is felt to be firm and fibrous instead of soft and vascular. In four of the five there persists also sufficient exophthalmos to make the patients rather more good looking than before the onset of the disease.

I have kept fairly full notes of the cases, but as the history of one is very like that of another, will refrain from citing them, and will content myself by merely referring to one of them. In this case, as in many of the others, *x*-rays were tried after several other methods of treatment had been adopted and had failed. The patient, a man aged 35, a typical case of a severe nature,

was seen at first by a physician in Belfast, and was treated by him by complete rest in bed, careful dietary, sedatives, and various antithyroid preparations for a period of about eighteen months. At the end of this time he had not progressed at all, but was extremely thin, was anæmic, had albumen in his urine, and suffered much from tachycardia and nervousness. About four years ago an *x*-ray course was started in Dublin by Dr. E. Watson, a daily exposure being given over a period of six weeks. During this course he began for the first time to show improvement, and the gain continued for months after the termination of the course until he was quite well. A short second course was given nine months after the first as a precautionary measure. At the end of the second course the gain in weight was 21 lbs.: it is now more than two stone, and the patient complains that he is getting too fat. His hæmoglobin went up during the nine months after the beginning of treatment from 60 per cent. to 95 per cent., the albumen in the urine completely disappeared, tremor ceased, and the pulse became absolutely normal. The goitre, at first soft and vascular, has become small, hard and firm. The patient for the last three years has been actively engaged at his work, and feels perfectly well.

This case, as I have already stated, is only on a par with the others that I have had treated, and from them I have personally formed the opinion that *x*-rays are worth a thorough trial in this disease. But I would like to emphasise the fact that no immediate sensational result is to be expected, and that patience and perseverance are required. What I have noticed is that a course of rays seems to be the starting point of a general improvement, sometimes after all other means have failed, and that the improvement continues long after the course has ceased, and ultimately results, in a majority of cases, in complete cure. I would also emphasise the fact that in cases that do well the thyroid gland became obviously hard and apparently fibrous, and the usually apparent dilated veins on the surface of the gland disappear. In three of

my cases, careful blood examinations showed a gradual return from an excessive lmphocytosis to a normal count. Lastly, I have laid little stress on initial diminution of tachycardia and restlessness, as similar improvement is often met with at the beginning of a simple treatment by rest and drugs, but such improvement is to be expected almost at once on starting the *x*-ray exposures.

ART. XVI.—*Summary of Eleven Years' Experience of Radium on Superficial Cancer, with Exhibition of Cases nine years cured.*[a] By C. M. O'BRIEN, M.D., L.R.C.P.I.; Physician to, and Lecturer on, Dermatology at the City Hospital for Diseases of Skin and Cancer; Hon. Member of the Dermatological Society of France.

IN 1904 I had the privilege of relating my experience of radium in the treatment of certain diseases, and in 1906 I exhibited at this Academy cases of superficial cancer (including rodent ulcer) cured by it.

It occurred to me that it might be not only interesting but instructive if I were to give a further record of these cases, together with an epitome of my experience consequent on the uninterrupted application of this method of treatment ever since. It is just possible that such a report is more likely to be of service in view of the fact that while the literature of radium-therapy has since accumulated with almost lightning rapidity, still the widest diversity of opinion exists amongst *bona fide* workers of all nations not only as to the possibilities and limitations of radium-therapy, but also as to its action on human tissues in health and disease. In my former paper in 1904 I referred to a few of the many difficulties with which early workers were confronted; amongst others I mentioned the difficulty of procuring, in sufficient quantity, radium of a reliable standard of radio-activity. I also referred to our almost total ignorance regarding the

[a] Read before the Section of Medicine in the Royal Academy of Medicine in Ireland, on Friday, May 15, 1914.

method of applying it and our crude conceptions as to dosage. I had had hopes that many of those difficulties would solve themselves in the process of time, and that out of the chaos then existing would filter, consequent on experience, data for our further and better guidance. I had also cherished the hope that in the light of modern research a better understanding as to the nature and causation of cancer would do much to elucidate many of the vagaries of this most mysterious remedy, and so rid the public mind of some of the horrors which the word malignancy conveys.

Through the whole flow and ebb of modern medicine, one of the facts most irresistibly brought home to the thoughtful observer is the frequency with which statements are made, unmade and even remade to suit the varying exigencies of increasing knowledge, which knowledge is but the equation expressing the exact measure of triumph which science has achieved over some of the mysteries of nature. Theories honestly propounded to-day are abandoned to-morrow, though perhaps at certain stages of their evolution they not only challenge fundamental dogmas, but menacingly threaten some of our most valuable literature. All this is especially true of radium-therapy, and yet, amidst all its fluctuations—and they are many—to me at least, the most encouraging sign in this struggle between man and disease is the persistence with which hope, patience, and perseverance appear and re-appear to steel, as it were, succeeding generations of workers to further and better efforts. Many of my early expectations have not been realised, and practically we stand to-day where we stood in 1904, hungering, as it were, not only for some exact knowledge as to the nature and causation of cancer, but mystified more than ever as to the nature of radium and its action on living tissues, animal and vegetable. Withal I most gladly and frankly express the belief, founded on eleven years' practical personal experience, that the future of Radium in the treatment of cancer is pregnant of much hope. I have

shown you material for great hope and expectancy ; I have shown you undoubted cases of superficial cancer, including rodent ulcer, cured by radium, pronounced cured by this Academy in 1906, and many times since by a succession of medical men who constituted my post-graduate classes. The cases were of long standing, some over ten years, during which period surgical and other treatment by eminent men had entirely failed. They are here once again for examination, perfectly well. I do believe no other known remedy could establish such results.

Against this I have to record a case which most forcibly illustrates the weak point in radium-therapy. I have shown you photographs and lantern slides bearing on the case of a female with a small epithelial cancer on left cheek, which was cured by radium in 1905 and exhibited here in 1906. Yet, in the tragedy of events, she presented herself to me at the Skin Hospital in August, 1911, nearly seven years after the original growth had completely disappeared, with metastases in the left cervical glands of one month's duration, from which she died eleven months later, a menace to all science. The moral to be drawn from all this experience and conflict of evidence convinces me, now more than ever, that if the maximum benefit is to accrue to mankind from radium-therapy, the utmost discretion and caution are necessary in our pronouncements as to the cure of cancer by radium. I am further convinced that Societies such as this, and more particularly scientific journals, should suppress by every legitimate means all straining after sensationalism.

I much regret that space forbids my noticing here many valuable contributions to the literature of radium-therapy and the brilliant achievements which are daily appearing.

Sir Alfred Pearce Gould, K.C.V.O., Senior Surgeon to and Surgeon in Charge of the Cancer Department, Middlesex Hospital, to whom I am indebted for much of my early training in surgery, deals very lucidly and very exhaustively with the radium treatment of the deeper-seated cancer in a paper which he read at Brighton in

July, 1913, before the Electro-therapeutic Section of the British Medical Association, and again in an address delivered by him before the annual meeting of the West Somerset Branch at Taunton the following December. I read both these articles with absorbing interest. Sir Alfred, as the result of his experience, sums up the situation of radium-therapy in the following terse but expressive sentence :—"When we have to consider the action of unknown and variable radium, upon unknown and very variable cancer, it is incumbent on us to speak with great reserve."

Dr. Robert Abbe, Professor of Surgery and Surgeon to St. Luke's Hospital, New York, is amongst some of the earliest and most enthusiastic explorers. After twenty-five years constant surgical work, ten or eleven years ago he undertook the study of radium-therapy with vim and fervour. He has pursued the fascinating study ever since and added to its literature. I am indebted to Dr. Abbe for the copy of an address on radium sent me in 1904, which he delivered before the Yale Medical Association in March of that year. I was much struck at the time by the minuteness of detail with which he carried out his biological experiments with radium rays on growing seeds.

Professor Wassermann, to whom we all owe so much, is at present engaged in a series of very interesting investigations concerning the action of radio-active substances on mouse cancer. In one experiment he undertakes to prove that gamma rays acted directly on tumour cells and not through the blood. For this purpose he takes an emulsion of cells in Ringer's fluid, kept at a temperature of thirty-seven degrees centigrade, which emulsion retains its malignancy for several hours, as shown by subsequent transplantation experiments, but the emulsion loses its malignancy when exposed to Mesothorium for even three hours, and fails to produce the original tumour in other mice. In a further experiment he shows that in the process of irradiation the cancer cells are not destroyed, but that the function of malignancy proliferation only was interfered with. To demonstrate this he takes Neisser's

bioscopic methylene blue test; this substance when in watery solution is reduced in the presence of living cells, and loses its colour. He further showed that irradiated cells were as potent to effect this reduction as the emulsion which had not been irradiated.

Wassermann therefore concludes that radio-active substances act on carcinoma by virtue of their power to disturb the function of malignant proliferation, and that the action of radio-active substances on malignant tumours in man is an elective effect on the proliferating capacity of the specific neoplasm present, and that the more active these cells of the neoplasm the more sensitive they are to the gamma rays.

In the early part of this communication I said that the most hopeful sign in radium-therapy was the steady influx of new workers unwearying in their endeavour to circumvent its difficulties, each believing that he who can best interpret its mysteries in such a manner as to render it of greatest benefit to mankind, will have truly played a good man's part. It is not only hopeful but most reassuring to notice surgical pioneers like Sir Alfred Pearce Gould, and hæmatologists of the eminence of Professor Wasserman, bringing their great and varied experience—born of many years hospital practice and laboratory work—to bear on the present insoluble problem of cancer and its cure. In connection with radium-therapy there are four names which I should like to mention. It has been my good fortune to have known most of them in the flesh, and to have benefited by the charm of their personal teaching. Unfortunately many of them have gone over to the land of the unseen: yet their genius endures and will endure. In the whole course of history there is one thing, and one thing only, which endures for ever: the crimes of Alexander and Napoleon are after a time forgotten. The desolation of countries and the destruction of men are evils which never fail to be repaired, but the discoveries of true genius endure for all time: they withstand the shock of nations and even out-live the struggles of rival creeds.

The name Finsen, of Copenhagen, by the genius which he displayed in his chosen field of phototherapy, already stands immortalised. The Curries, of Paris, will ever be associated in name with radium—the greatest discovery of modern times—and it may be of all time. While Röntgen, who believed not in his own greatness but in the greatness of his own work, has behind him everything that Science owes to the discovery of the *x*-rays.

In dermatology four names prominently stand out eminently worthy of honourable mention. Although they are all gone, succeeding generations of dermatologists are not likely to forget the part which they played by their teachings and their writings in elevating dermatology amongst the other and more favoured specialties—from ostracism to toleration, and from toleration to favour. These are the names of Professor Lassar, of Berlin ; Dr. Louis Wickham, of Paris ; Sir Jonathan Hutchinson and Dr. Radcliffe Crocker, of London.

Case I.—Mrs. F. X., aged fifty-three ; married ; has four children, all living and healthy. Admitted to City Hospital for Diseases of the Skin and Cancer, July 3rd, 1904.

Personal History.—The little lump, which she took to be a wart, began about ten years ago. Not having caused her any inconvenience except slight itching occasionally, she did not bother consulting a doctor. In about two years from its onset the pimple or wart used to bleed if irritated with the towel in drying. About this time it was the size of a sixpence. She noticed it becoming softer and larger and discharging a little. The itching was less, but she began to notice a few darting pains. She now consulted a doctor, who prescribed a powder which she thought dried it up, but as the sore appeared to be spreading and the darting pains became more constant she consulted a surgeon early in 1902, who did not consider her case a suitable one for a surgical operation. She continued under his care for a year and eight months. The surgeon meantime died, and she came to the City Hospital for Diseases of the Skin and Cancer.

Condition on Examination, July 3rd, 1904.—There was an irregular area of ulceration, a little smaller than a florin, on

PLATE I.

CASE I. Mrs. F. N, aged 53 years.

Before Treatment. After Treatment

left cheek, close to, and slightly lower than, ala of nose. It presented all the typical characteristics of rodent ulcer: the edge was well raised, distinctly serrated or bitten out; the floor of the ulcer had extended down to the left superior maxilla; the floor was very irregular, and from it exuded a copious thin fluid. Under local anæsthesia a small piece of the growth was removed; microscopic examination of this confirmed the clinical diagnosis.

Between July 3rd, 1904, and January 15th, 1905, she had in all thirty-five exposures of radium bromide, thirty of fifteen minutes with 5 mg. and five of 50 mg. After the first ten exposures the discharge steadily became less, the raised, rolled-in edges softened and became perceptibly less pronounced. After the twentieth exposure a reaction set in with increasing pain, swelling and tenderness of part, the temperature running up to 100° F., all treatment was suspended for a month. During this time the floor of the ulcer became smooth and filled in considerably. Pain, tenderness and swelling had now subsided. The further treatment went on uninterruptedly until January, 1905, when she was discharged with the sore perfectly healed over, as seen in the illustration.

This patient was exhibited cured before the Royal Academy of Medicine in 1906 and again in 1914.

The photographs, Plate I., show the patient before and after treatment.

It is sad but interesting to have to record that this patient's husband, aged fifty-eight, a mason by trade, presented himself at the City Hospital for Diseases of the Skin and Cancer in June, 1911, with a typical epithelioma of lip of eight months' growth, about the size of a pea. There was no glandular enlargement, and it appeared to me to be an ideal case for surgical operation. Sir Thomas Myles, F.R.C.S.I., Consulting Surgeon to the Skin Hospital, saw the case with me, and very kindly admitted him to the Richmond Hospital, in which he removed the growth the following day. The man made an excellent recovery. Eight months later he was readmitted to the Richmond Hospital; the lip was perfectly well, but he was now threatened with obstruction of the bowel, for which Mr.

Conway Dwyer, in the absence of Sir Thomas Myles, did a colotomy. The patient succumbed about six months later from recurrence of the obstruction.

Case II.—Mrs. R., aged forty-eight; married; three children living and healthy; her parents lived to 75 and 80 respectively. Complained of a sore on the left side of her nose for about six years. She had it scraped in 1900 and burns twice afterwards, the last time in 1903. At first it came as a little pimple which afterwards formed into a small crust, which became itchy and bled on being scratched. The rubbing in drying the face used sometimes draw blood. It did not spread much, but it seemed to grow deeper, and for the past three years a few stinging pains made her think it was not an ordinary wart.

Condition on commencing Radium Treatment, May 4th, 1904.—An ulcerated patch the size of a shilling involving left ala of nose; edge irregular and somewhat raised above surrounding tissues; floor of ulcer studded over with granulations which bled freely. The underlying cartilage could be distinctly felt with the probe; on removing the probe free bleeding took place. Removal of a portion of the growth revealed the presence of cell nests very distinctly.

From May 4th, 1904, to July 7th, 1904, she had in all eighteen exposures of radium bromide, sixteen of fifteen minutes with 5 mg. and two of thirty minutes with 50 mg. After the first fifteen exposures the edges of ulcer slowly but steadily melted; the discharge, which was never excessive, entirely disappeared. The floor of ulcer had by this time become flush with the surrounding surface. On July 7th, 1904, it had completely healed over, presenting a perfectly smooth, pliable cicatrix.

This patient was exhibited cured before the Royal Academy of Medicine in 1906 and again in 1914.

Case III.—Mrs. F., aged forty-seven; married; one child living and healthy. Admitted to City Hospital for Diseases of the Skin and Cancer, November 1st, 1904.

Present History.—A small spot about the size of a pea occurred under left eye about eight years ago. She frequently picked off the scale, but it always soon reformed, and the sore appeared to increase somewhat. Had itching but no pain until latterly, when she observed some darting pains occasionally.

CASE III.—Mrs. F., aged 47 years.

Before Treatment. After Treatment.

PLATE III.

Dr. C. M. O'Brien on "Summary of Eleven Years' Experience of Radium on Superficial Cancer."

CASE III. Mrs. F., aged 47 years.

Condition on Admission, November 1st, 1904.—A small encrustation about the size of a threepenny-piece under left eye, situated midway on a line drawn from left outer canthus to left ala of nose; border slightly raised; slight exudation with frequent formation of crust. From November 1st, 1904, to her discharge on March 10th, 1905, she received forty-seven exposures of radium bromide of from ten to fifteen minutes' duration. August 11th, 1911, she presented herself to me at City Hospital for Diseases of the Skin and Cancer, nearly seven years after the original growth had completely disappeared, with metastases in left cervical glands, of one month's duration, nearly the size of a plum, from which she died eleven months later.

[Photographs and lantern slides were exhibited showing recurrence of the growth in glands.]

This patient was shown cured before the Royal Academy of Medicine in 1906.

The photograph, Plate III., shows recurrence of the growth in glands, August, 1911.

Case IV.—Miss B., aged twenty-six; shirtmaker; was admitted early in 1904 for radium treatment to City Hospital for Diseases of the Skin and Cancer. A growth on left cheek about the size of a shilling, slightly elevated above the surrounding skin; there was no pain and no discharge. Within the last few months she thought it had increased in size.

Condition on Examination, January, 1904.—A darkish brown patch about the size of a shilling, slightly raised above the surrounding surface of left cheek, with most of the characteristics of a mole. It was painful on pressure. There was neither ulceration nor itching. Unable to procure a specimen for microscopic purposes fearing the disfigurement might be increased by so doing.

During nine weeks' treatment she received forty-one exposures of radium bromide, varying in duration from fifteen to forty-five minutes.

The growth steadily broke down, leaving a pliable smooth cicatrix, scarcely perceptible but for the presence of a very slight dimple.

The patient appeared cured before the Royal Academy of Medicine in 1906, and again in 1914.

Case V.—Miss S. F.; submitted to radium September 4th, 1911.

Personal History.—Suffered from a warty patch on side and tip of nose for seven years, during which time it increased from the size of a sixpence to that of a half-crown; had various treatment, medical and surgical, including ionic medication, but it continued to spread and become more troublesome, hot, itchy, and painful by times.

Condition on Examination, September 4th, 1911.—An area of ulceration on left side and tip of nose the size of a half-crown. Irregular in outline; margin somewhat raised and hard; floor of ulcer irregular and studded over with unhealthy granulations which bled on being touched.

From September, 1911, to February, 1912, she had thirty-eight exposures, varying in duration from fifteen minutes to two hours; had four exposures of two hours with 50 mg. radium bromide.

The photographs, Plate IV., show the state of the patient before and after treatment.

She was exhibited cured before the Royal Academy of Medicine for the first time in May, 1914.

Case VI.—Mrs. McK., aged sixty-nine; married. Admitted September 10th, 1911; discharged December 17th, 1911.

Personal History.—For about twenty years she suffered from a lump on back of hand, which caused her no trouble nor anxiety until about four years ago, when stinging pains shooting up the arm were first noticed. These grew steadily worse. About this time she consulted "Nature's Doctor," whom she described as the seventh son born of the same parents without a daughter intervening. He massaged the lump, but she thinks it grew more steadily larger. Early in 1911 the pain became more severe, especially at night. Shooting pains were now pretty constant, and the back of hand became swollen. Her power of gripping things became very feeble. She now consulted a doctor, who advised her to go at once to a surgeon and have an operation done without further delay. She did not think her chest would stand being put to sleep, as she always suffered from bronchitis; so she delayed going to the surgeon recommended.

CASE V.—Miss S. F.

Before Treatment.

After Treatment.

CASE VI.—Mrs. McK., aged 69 years.

Before Treatment. After Treatment.

Condition on Admission to Radium Treatment.—A fungating growth on back of left hand nearly as large as a plum. It bled on being touched. It was irregular in outline and uneven on surface. The hand was swollen and the back of hand and wrist œdematous. She had acute pain, increased on lowering the hand by the side, and her power of grasp was perceptibly diminished.

She had fifteen exposures of thirty minutes and five of one hour's duration. The growth steadily melted down; discharge was copious in early stage of irradiation, but diminished later. The cavity, consequent on the disappearance of the growth, slowly filled up, leaving healthy scar, tissue and slight depression to mark the original position of the growth.

The patient was exhibited cured before the Royal Academy of Medicine, May, 1914. The state before and after treatment is illustrated in Plate V.

Case VII.—Mrs. D., aged sixty-nine; widow. Admitted to City Hospital for Diseases of the Skin and Cancer, June 25th, 1912; discharged, cured, November 8th, 1912.

Personal History.—Suffered for nine years from a small lump on side of lower jaw. For the first three years she took no notice of it. It was slightly itchy at times, but not troublesome. Sometimes she used to hurt it when washing the face, and a little blood might be seen on the towel. For the past six years she noticed a moisture like clear water, sometimes it was mixed with blood. She has not been able to rest on that side at night for at least five years.

Condition on commencement of Radium Treatment. June, 1912.—An ulcerating growth on side of right cheek as large as a good sized plum; it was distinctly adherent to left inferior maxilla. The edges were raised and serrated; the floor of ulcer was irregular, and watery matter mixed with blood exuded on pressure. With the probe the mandible could be clearly felt, in parts denuded of its periosteum. Microscopic specimen showed cancer with a few cell nests.

Had in all forty-three exposures of radium, varying from thirty minutes to two hours.

Mrs. D. was exhibited cured before the Royal Academy of Medicine for the first time in May, 1914.

The Photographs, Plate VI., show the state of this patient before and after treatment.

Case VIII.—P. K., aged fifty-nine ; married ; three children, all living and healthy ; admitted to City Hospital for Diseases of the Skin and Cancer, June 6th, 1913.

Personal History.—Thirteen years ago a small wart grew on side of nose ; sometimes itchy, and when scratched or rubbed with towel it bled. Within the last three years it became larger and sorer. Applied various ointments and washes, but it never disappeared.

Condition on Admission, June 6th, 1913.—An irregular ulceration of left ala of nose and adjoining tissues of cheek, the inflammatory area corresponded to the size of at least a two-shilling-piece, from which there was a copious discharge of foul-smelling pus mixed with blood. The ulcer presented an eaten-out border ; the floor was distinctly uneven and covered with unhealthy granulations, which bled freely on being touched.

From June to November, 1913, he was subjected to fifty exposures. After the twentieth exposure a rather sharp reaction manifested itself : the edges of ulcer became swollen and very tender ; the discharge increased and assumed the colour of dark blood ; the odour was very foul-smelling ; temperature reached 102° F., and all the aforementioned symptoms persisted for twenty-four hours. The patient remained in bed under restricted diet, with hot boracic fomentations to ulcerated region.

The end of second day the temperature reached normal again, the soreness and excessive discharge grew steadily less. Radium treatment was resumed in three weeks from onset of reaction and continued uninterruptedly until the date of his discharge, November 8th, 1913.

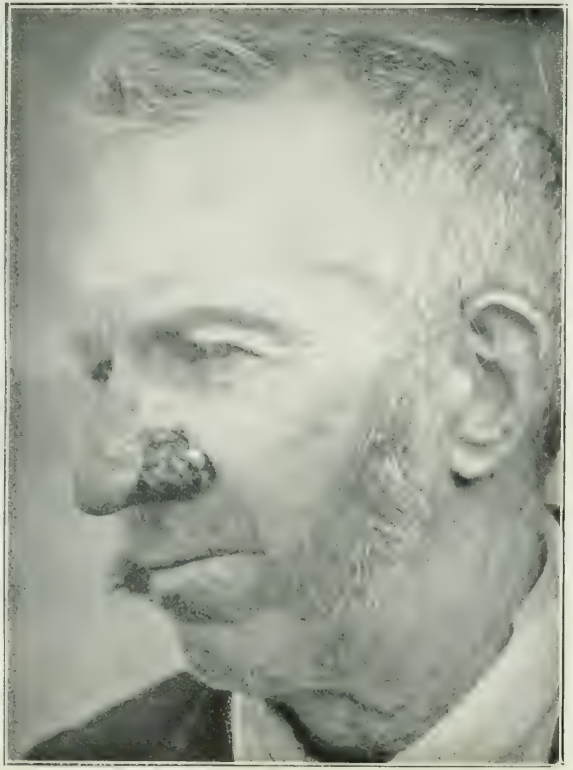
The man was exhibited cured before the Royal Academy of Medicine, in May, 1914, for the first time.

Photographs before and after treatment are shown in Plate VII.

CASE VII.—Mrs. D.

Before Treatment.

After Treatment.



CASE VIII.—P. K., aged 59 years.

Before Treatment. After Treatment.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

On Dreams. By Prof. Dr. Sigm. Freud. Only authorised English Translation by M. D. Eder from the second German Edition. London: William Heinemann. 1914. Cr. 8vo. Pp. xxxii + 110.

Dr. Freud's handbook is interesting, illuminating and suggestive. His views will not always meet with acceptance; spiritists will look in vain for supernatural agencies, psychologists and alienists of the old school will be somewhat contemptuous of the attention paid to what they have regarded as dissociated and meaningless play of the cerebral functions.

For the alienist, however, there are many valuable hints in Dr. Freud's method. In cases of mental obsession, cure very frequently follows when the structure of the bogy can be shown, when the patient can be induced to look back and recognise that the dreadful fiend is but a candle in a turnip. The roots of the *agri somnia vana* are, as a rule, hidden from the patient; when they are exposed the doctor can root out the written troubles of the brain. Psychotherapy becomes then in many cases conditional on psycho-analysis, and the alienist stands, like a modern Daniel, ready to interpret dreams. For it is in dreams most frequently that the secret mental disorder can most clearly be detected.

Dreams are no chance sport of the brain, but the manifestation of ordered mental processes. The dream interpreter has to determine the nature of these processes. Dr. Freud holds that all dreams are ultimately inspired by egoistic motions, that they are the concealed realisations of repressed desires. Most of the dreams of adults are traceable by analysis to erotic desires, which can be discovered in the latent dream content. Between the

manifest dream content and the latent content a kind of censorship is established, and under this censorship the latent content is altered by the process of "dream work" into the manifest dream.

Dr. Freud distinguishes four principal modes in this dream work :—(1) Condensation whereby a single dream element is representative of many waking experiences ; (2) dream displacement whereby the emotional emphasis is transferred from its right place in the train of dream-ideas to some trivial element in the dream content ; (3) dramatisation of the dream content, the work of the figurative imagination which aims at unity—a method in the madness ; (4) elaboration due to a regard for intelligibility, whereby the dream gets a kind of façade, which coördinates superficially the structure due to dream work. The dream work is not creative ; "it develops no fancies of its own, it judges nothing, decides nothing." The intellectual operations were already present in the dream-ideas, and have been transferred *en bloc* to a new context in the manifest dream content.

All this dream-work is due to the psychical censorship, the regard for appearance, the effort to suppress the unpleasant or the impossible. The dreamer is unconscious very often of the desires which actuate him, and their existence can be established only by analysis of the dream content. Dreams may be roughly classified as, firstly, those which exhibit non-repressed, non-concealed desire ; these are dreams of the infantile type, becoming rarer among adults. Secondly, dreams which express in veiled form some repressed desire ; these constitute the larger number of our dreams. Thirdly, these dreams where repression exists, but without or with but slight concealment. These dreams are invariably accompanied by a feeling of dread which brings the dream to an end. So far from being a disturber of sleep, the dream is the true guardian of sleep. In infantile dreaming this is manifest : in his dream the child gets what he wants, and so is content and sleeps on. The case with the adult is fundamentally the same. Life has taught him the

futility of desire, the need of restraints. The psycho-physiological condition of sleep relax some of the energy devoted to repression, but the internal stimuli that arise from the repressed desires which find relief in the dream and do not interrupt the procedure of sleep.

The symbolic character of much of the manifest dream content is due to the ultimately erotic character of the dream thoughts. The psychic Mrs. Grundy shrinks from calling a spade a spade, and has evolved a symbolism which finds expression in the dream. "Dream-symbolism" proves indispensable for understanding the so-called "typical" dreams and the dreams that repeat themselves.

This limitation of the ultimate dream motive will be fiercely challenged by many who find in dreams messages from another world or atavistic resurrections. But the students of comparative religion, of folklore and mythology will, perhaps, find here a hint to illuminate many of the dark corners of human traditions.

The translator has done his work well; he has himself contributed an excellent introduction. T. G. M.

Saint Thomas's Hospital Reports. New Series. Vol. XLI. Edited by DR. J. J. PERKINS and MR. C. A. BALLANCE. London: J. & A. Churchill. 1914. Demy 8vo. Pp. xii + 237.

IT is difficult to over-estimate the value of this great annual. It is a very mine of information. But no mine ever deterred the worker more effectually than the make-up of this wealth of information, which is enshrined in beautiful ruby type and columns of statistics. The reviewer rises from the task with aching eyes and a splitting headache; and all this suffering results from a desire to save a few shillings. No volume better repays reading, both specialists and general practitioners may benefit from its records, and the progress of Medicine demands that the benefits be secured without risk of blindness or of a headache that simulates meningitis in its intensity.

THE VACCINATION QUESTION.

1. *Fiftieth detailed Annual Report of the Registrar-General for Ireland.* Containing a General Abstract of the Numbers of Marriages, Births and Deaths registered in Ireland during the year 1913. London: Printed under the Authority of His Majesty's Stationery Office, by Alex. Thom & Co., Ltd., Abbey Street, Dublin. 1914. Folio. Pp. xlv. + 168.

2. *Supplement to the Quarterly Returns of the Marriages, Births and Deaths registered in Ireland during the year* 1912. Being Statistics regarding the Vaccination of Children whose Births were registered in Ireland in that year. London: Printed under the Authority of His Majesty's Stationery Office, by Alex. Thom & Co., Ltd., Abbey Street, Dublin. Folio. Pp. 44.

3. *Annual Report of the Local Government Board for Ireland for the year ended 31st March*, 1914. Being the Forty-second Report under "The Local Government Board (Ireland) Act, 1872," 35 & 36 Vic., c. 69. London: Printed under the Authority of His Majesty's Stationery Office, by A. Thom & Co., Ltd., 87, 88 and 89 Abbey Street, Dublin. 1914. Large 8vo. Pp. lvi. + 380.

4. *The Vaccination Question in the Light of Modern Experience.* By C. Killick Millard, M.D., D.Sc.; Medical Officer of Health for Leicester; Medical Superintendent of the Isolation and Smallpox Hospitals, Leicester; formerly Medical Officer of Health for Burton-on-Trent; Medical Superintendent of the Birmingham City Hospitals. London: H. K. Lewis. 1914. Demy 8vo. Pp. xvi. + 244.

Only within the last few years has the Vaccination Question arisen in Ireland, largely indeed owing to an active propaganda on the part of the National Anti-Vaccination League of which the official organ is *The Vaccination Inquirer*, published monthly. In the number of that publication for March 1914, the following passage occurs: "Many of us would prefer an attack of smallpox

to vaccination, all of us would prefer the risk of smallpox to the certainty of vaccination. Smallpox is a natural disease running a known course. . . . Vaccination is a loathsome disease of uncertain origin, artifically transmitted through various beasts and capable of setting up a variety of repulsive, dangerous, and even fatal affections."

Such is the teaching of the National Anti-Vaccination League through its mouthpiece, *The Vaccination Inquirer*. The apostles or missionaries of the League carried this doctrine first to the south-east of Ireland a few years ago, and it was the Enniscorthy Board of Guardians that first raised the standard of revolt in this country against compulsory vaccination.

How quickly the leaven has spread through Ireland may be gathered from the following passage in the Annual Report of the Irish Local Government Board for the year ended March 31, 1914, pages xxvi. and xxvii. : "In recent Annual Reports we drew attention to the marked diminution which has taken place in the numbers of primary vaccinations performed by Poor Law Medical Officers, as compared with former years, and we regret to report that during the year now under review there has been a still further considerable falling off in these vaccinations. The diminution in the two Unions, which include the city and suburbs of Dublin, has been very marked. The primary vaccinations carried out by the Dispensary Medical Officers of North and South Dublin Unions in the year ended March, 1911, numbered 6,372, and in the year ended March, 1912, the number fell to 5,317, and in the year ended March, 1913, there was a further decrease to 2,689, whilst in the past year the number amounted only to 1,527. There are now enormous numbers of unvaccinated children in the City of Dublin, and, notwithstanding our repeated warnings, the Guardians of the two Metropolitan Unions have persistently refused during the past three years to discharge the statutory obligations which devolve upon them of administering the Vaccination Acts."

The action of the Local Government Board—the supreme sanitary authority in Ireland, be it remembered—was eminently characteristic. It is described in their

own words by the Board :—" In this condition of affairs, we felt it incumbent on us to address the Corporation of Dublin as Sanitary Authority for the City, and requested them to provide the further hospital accommodation necessitated by the default of the Boards of Guardians to enforce the provisions of the Vaccination Acts " !

Could there be a more fatuous policy than this? A public body shows default, when the controlling supreme authority, instead of insisting on the law of the land being obeyed, " requests " another public body to " pluck the chestnuts out of the fire " by penalising the citizens of Dublin, who will have to pay for " the further hospital accommodation necessitated by the default of the Board of Guardians." We have a shrewd suspicion that the Corporation of Dublin will in their turn show default, and so the vicious cycle will be complete until smallpox arrives and, after the fashion of a submarine, involves the Local Government, the Boards of Guardians, and the Corporation in a like fate, so far as their administrative capacity is concerned.

For full vaccination statistics we turn to the publications of the Registrar-General for Ireland. In the Supplement to the Quarterly Returns for 1912 it is stated that of the 101,035 children whose births were registered in Ireland during the year 1912, 66,934 were returned as having been successfully vaccinated; 3,375 as having had their vaccinations postponed; 91 cases were returned as unsuccessful, on the ground of constitutional insusceptibility of the vaccine disease; 5,778 children as having died before vaccination; 3,143 were returned as " unaccounted for owing to removal from district or otherwise," and 21,714 were reported as defaulters who had not been granted an extension of time under the Acts. When expressed in percentages, it appears that 66.3 per cent. of the total children born in 1912 were reported as successfully vaccinated; that 3.3 per cent. were postponed on account of the children being unfit for vaccination; that 0.1 per cent. were insusceptible of vaccination; that 5.7 per cent. died before they were vaccinated; that 3.1 per cent. were " unaccounted for owing to removal from district or

otherwise"; and that 21.5 per cent. were returned as defaulters.

The following Table gives the condition as regards vaccination of the children whose births were registered in the year 1912, as compared with each of the preceding eight years :—

TABLE I.—Showing particulars regarding the Vaccination of the Children whose Births were registered in Ireland during each of the nine years 1904–1912, with their percentage to the total Births registered during each year.

Years	Successful Vaccinations (Form A, First Schedule)	Vaccinations Postponed (Form B, First Schedule)	Insusceptible of Vaccine Disease (Schedule D)		Died before Vaccination	Unaccounted for owing to removal from District or otherwise	Defaulters who have not been granted an extension of time under Form B. First Schedule	Total Births Registered
			On the ground of Constitutional Insusceptibility of the Vaccine Disease	In respect of the Children already having had Smallpox				
1904	84,068	2,184	118	2	7,105	3,774	6,560	103,811
1905	84,326	2,505	90	—	6,624	3,625	5,662	102,832
1906	83,223	2,555	121	—	6,955	4,229	6,453	103,536
1907	81,841	2,360	88	—	6,656	3,567	7,230	101,742
1908	80,504	2,601	96	—	6,808	3,217	8,813	102,039
1909	80,455	2,715	118	—	6,651	3,884	8,936	102,759
1910	78,839	2,754	83	—	6,680	3,694	9,913	101,963
1911	73,856	2,990	151	—	6,434	4,518	13,809	101,758
1912	66,934	3,375	91	—	5,778	3,143	21,714	101,035
	%	%	%	%	%	%	%	%
1904	81.0	2.1	0.1	0.0	6.9	3.6	6.3	100.0
1905	82.0	2.4	0.1	—	6.5	3.5	5.5	100.0
1906	80.4	2.5	0.1	—	6.7	4.1	6.2	100.0
1907	80.4	2.3	0.1	—	6.6	3.5	7.1	100.0
1908	78.9	2.5	0.1	—	6.7	3.2	8.6	100.0
1909	78.3	2.6	0.1	—	6.5	3.8	8.7	100.0
1910	77.3	2.7	0.1	—	6.6	3.6	9.7	100.0
1911	72.6	2.9	0.2	—	6.3	4.4	13.6	100.0
1912	66.3	3.3	0.1	—	5.7	3.1	21.5	100.0

In 1912 it appears that the successful cases of vaccination in the province of Leinster numbered 12,370, or 45.8 per cent. of the total births registered; in Munster the successful vaccinations numbered 14,847 or 64.0 per cent. of the total births registered therein; in Ulster the successful vaccinations numbered 30,417 or 81.3 per cent. of the total births registered; and in the province of Connaught the number of successful vaccinations reported was 9,300 or 69.2 per cent. of the total births registered.

From this Table (I.) it appears that successful vaccinations, which were 81 per cent. of the births registered in 1904, rose to 82 per cent. in 1905, but declined to 80.4 per cent. in each of the years 1906 and 1907, to 78.9 per cent. in 1908, to 78.3 per cent. in 1909, to 77.3 per cent in 1910, to 72.6 per cent. in 1911, and to 66.3 per cent. in 1912.

The Registrar-General states that during the year 1913 there was no report of a death from the vaccine disease or from any other effect of vaccination.

In the following tabular statement the number of successful vaccinations returned for each of the years 1882-1912 is given :—

TABLE II.—Showing the Number of Successful Primary Vaccinations in Ireland during each of the years 1882 to 1912. [Extracted from Quarterly Reports.]

Year	Number of Successful Primary Vaccinations in each year	Year	Number of Successful Primary Vaccinations in each year	Year	Number of Successful Primary Vaccinations in each year
1882	107,613	1893	88,695	1903	95,955
1883	106,961	1894	107,204	1904	91,976
1884	105,021	1895	92,227	1905	89,394
1885	102,680	1896	88,817	1906	90,171
1886	97,137	1897	89,732	1907	89,207
1887	96,866	1898	87,169	1908	88,576
1888	93,520	1899	84,937	1909	86,799
1889	92,621	1900	91,150	1910	88,698
1890	93,368	1901	88,520	1911	84,011
1891	92,267	1902	94,303	1912	77,374
1892	89,527				

The following table shows the number of deaths from smallpox registered in Ireland in each of the years 1864-1912 :—

TABLE III.—Showing the Number of Deaths from Small-pox registered in Ireland in each of the 49 years 1864 to 1912.

Year	Number of Deaths registered from Small-pox	Year	Number of Deaths registered from Small-pox	Year	Number of Deaths registered from Small-pox
1864	854	1881	72	1897	3
1865	461	1882	129	1898	—
1866	194	1883	16	1899	1
1867	21	1884	1	1900	1
1868	23	1885	4	1901	2
1869	20	1886	2	1902	1
1870	32	1887	14	1903	40
1871	665	1888	3	1904	16
1872	3,248	1889	—	1905	5
1873	504	1890	—	1906	—
1874	569	1891	7	1907	1
1875	535	1892	—	1908	—
1876	24	1893	1	1909	—
1877	71	1894	72	1910	—
1878	873	1895	146	1911	—
1879	672	1896	4	1912	—
1880	389				

It will be observed that the last record of mortality from smallpox in Ireland was in the year 1907, when one death was registered.

Now, so far as we have gone in this review, two facts stand out in bold relief—first, an uncompromising opposition to vaccination on the part of the National Anti-Vaccination League; and, second, a rapid decline of the practice of vaccination in Ireland. The latter has been brought about by three agencies—an active anti-vaccination crusade engineered by the League, carelessness on the part of parents and guardians of new-born children, and a reprehensible passive resistance on the part of Boards of Guardians to the working of the Vaccination Acts. We cannot exempt from blame the Local Government Board for not insisting that the Boards of Guardians should do their statutory duty of enforcing primary vaccination.

A notable contribution to the literature of the Vaccination Question has been made quite recently by Dr. C. Killick Millard, Medical Officer of Health for Leicester, who appeals for reconsideration of the whole question in the light of modern experience. Dr. Millard's official position, his reputation as a sanitarian, and the admirable manner in which he puts his case, entitle him to receive the fullest and most dispassionate consideration for his views.

It is a matter of common knowledge that Leicester has been for very many years the headquarters of the crusade against vaccination. Prior to the great smallpox epidemic or pandemic of 1871-1872 Leicester ranked as a fairly well vaccinated town, though there had been a certain amount of vaccination default. From 1849 to 1871, whereas the births in Leicester numbered 61,084, the registered vaccinations were only 41,497, or 68 per cent. In July 1868 the first vaccination officer (Mr. Maskell) was appointed with the object of enforcing the provisions of the Vaccination Acts. Prosecutions for default followed his appointment, and during the ensuing four years, 1868-1871, the number of primary vaccinations rose to 87 per cent. of the births, deaths of infants of course accounting for a good deal of the 13 per cent. deficiency.

Then came the epidemic, when in spite of Leicester's supposed "well-vaccinated" state, large numbers of the population were attacked, and no less than 358 deaths occurred. Following the outbreak, an attempt was made to enforce vaccination by prosecution for default. The number of prosecutions grew from only two in 1869 to 1,154 in 1881. But the opposition to vaccination grew in direct proportion. Those who were penalised for defying the law were looked on as martyrs, and the Leicester Anti-Vaccination League was called into being. The popular agitation against compulsory vaccination continued to gain strength until at last it culminated in a great national demonstration which was held in Leicester on March 23rd, 1885. This demonstration practically settled the question of compulsion in Leicester. As a

result of the anti-vaccination agitation, the number of vaccinations began to decline rapidly. By 1887 they had fallen to only 10 per cent. of the births, and by 1891 to less than 2 per cent.

Dr. Millard tells us that "ever since the dawn of the sanitary era in Leicester, smallpox, though many times introduced from outside, has never caused another disaster like that of 1871-2. There have been at least forty separate importations of smallpox since the disease was made notifiable in 1878 [under a private Act], but only three times has it succeeded in assuming epidemic proportions. Moreover, each of these three epidemics has been trifling, as regards the mortality caused by it, compared with the epidemics of the pre-sanitary era." (Page 124.)

The "Leicester Method," by which that town has endeavoured successfully to control smallpox, consists in the adoption of the following preventive measures—notification, hospital isolation, disinfection, searching for "contacts," vaccination and surveillance of "contacts." On this last point Dr. Millard expresses himself as follows (page 127):—"I regard it as absolutely proven that vaccination, even after exposure to infection, is usually effective, provided that no more than three or four days have elapsed since the infection was contracted. The vaccination of contacts is therefore a very useful and important measure, not only for the sake of the contacts themselves, but also for the sake of reducing the number of cases of smallpox to be dealt with. It can hardly be regarded as an *essential measure*, and I do not consider that any compulsory powers in this direction are either necessary or desirable. It is much less certain in its effect than is vaccination before exposure. In any case the contacts must be kept under surveillance, and in the event of smallpox appearing it is almost always possible, by prompt removal to hospital, to prevent the infection going any farther."

Having stated in outline his position with reference to the two contending parties in this controversy—the Pro-

Vaccinists and the Anti-Vaccinists, Dr. Millard advances (in Chapter II.) the following propositions :—

1. Vaccination has, beyond all doubt, so far as the individual is concerned, a protective influence against smallpox.

2. The effect of vaccination upon a community is a variable quantity.

3. Smallpox is disappearing from Great Britain independently of the practice of infantile vaccination.

It will be observed that in the first two of these propositions the author contrasts the "individual" with the "community." "It is necessary at the outset," he writes, "to insist upon the importance of making a clear distinction between the effect of vaccination upon the individual and the community." (Page 9.)

Dr. Millard's argument, stated briefly, is as follows :— "Recent vaccination confers on the *individual* protection against smallpox which, for practical purposes, is complete, though unfortunately only temporary." Further, "vaccination has a remarkable power of modifying and mitigating smallpox for many years after its power to protect against attack has worn out. Moreover, the protection conferred by vaccination can be renewed by revaccination."

He proceeds :—"The great difficulty in controlling the spread of smallpox at the present day in this country *is the occurrence of unrecognised or 'missed' cases of the disease*, which spread infection broadcast before any precautions can be taken. . . . These unrecognised cases which do so much mischief, and which go so far to thwart our efforts to control the disease, *occur chiefly amongst persons vaccinated in infancy and because they were so vaccinated.*"

Now it occurs to us that there is a serious flaw in this line of argument. Surely unrecognised cases could not possibly spread infection broadcast except through an unprotected and, therefore, a susceptible community.

But Dr. Millard goes further. "In other words," he writes, "it would seem that infantile vaccination has a

distinct tendency to encourage the spread of smallpox, which goes far to neutralise any benefit which the community might otherwise derive from the fact that such vaccination largely protects the child population against the disease."

This is an unfair inference, for it altogether loses sight of the protective influence of re-vaccination, which the author has already admitted at the outset, and which he emphasises in italics at page 26 in the following sentence : " I am quite prepared to admit that *a complete system of universal vaccination and re-vaccination and repeated re-vaccination, if such could be efficiently carried out, would abolish smallpox from any country in the world.*" In the United Kingdom he is satisfied, however, that " such a drastic measure " is not necessary, and that " it is now frankly admitted, even by the most extreme pro-vaccinists, that general re-vaccination of the community is no longer a question of practical politics."

Chapter III. is devoted to a consideration of the finding of the Royal Commission on Vaccination appointed in the year 1889, and of the conclusions arrived at in the Final Report of the Commission, which was not published until 1896. The remainder of Dr. Millard's work deals with the experience of smallpox which has been gained since the issue of that Final Report. The author accordingly proceeds to discuss the relative importance of vaccination and sanitation (Chapter IV.), the tendency of vaccination to spread smallpox by masking the disease (Chapters V. and VI.). Then follow three chapters on " The Leicester Experiment " and an instructive chapter on the history of smallpox prevention based on outbreaks in Dewsbury in 1893 and 1904, and in Gloucester in 1895-1896. In this last case, in a town of only 40,000 inhabitants, 1,979 cases of smallpox occurred, mostly within the short space of five months. Moreover, the type of the disease was unusually severe, no less than 434 of the cases proving fatal, equivalent to a case mortality of 21.0 per cent. Both towns, by the way, were badly vaccinated, so to speak.

In Chapter XI. on " Injuries caused by Vaccination,"

the author very fairly brings forward all the available evidence touching such injuries, and in equal fairness "restores the perspective," and corrects any exaggerated impression which may have been conveyed by the recital. The most serious vaccination disaster was an outbreak of very fatal erysipelas following vaccination which occurred in the Misterton District of the Gainsborough Union, Yorkshire, in 1876. This untoward and disgraceful incident took place thirty-eight years ago, and was reported upon to the Local Government Board by their Inspector, Mr. J. Netten Radcliffe. He was unable to trace the source of the infection but very properly blamed the dirty methods of the public vaccinator, whom he described as being "reprehensibly careless." His lancets were blunt and rusty, both blades and handles were dirty, whilst his "points" were stated to be "filthy." Moreover the used "points," smeared with blood, were carried mixed up with the unused points. Mr. Radcliffe in his report, also drew attention to the insanitary surroundings of many of the victims' homes. No wonder that Fehleisen's streptococcus, not yet recognised, revealed its presence in producing sickness and death.

Dr. Millard has been Medical Officer of Health for thirteen years of a town (Leicester) with a child population 90 per cent. of which is unvaccinated. This has led him to some startling conclusions. First, he considers that infants, though unvaccinated, enjoy a comparative immunity from smallpox. From this view we must, from personal knowledge, express our emphatic dissent. However he gives figures in support of his opinion at page 150. Secondly, he thinks that the value of infantile vaccination in checking the spread of smallpox in a "civilised" community has been greatly over-estimated. Thirdly, the chief factor in the dissemination of smallpox at the present day is, undoubtedly, the unrecognised case—in this opinion we are at one with the author. But the remedy he suggests evokes a smile: "If the General Medical Council would only ordain that every medical student in his final examination had to 'pass' in

the diagnosis of smallpox as a special subject, ways and means for obtaining the necessary knowledge would quickly be devised, and the whole situation would be radically changed" (page 191). Fourthly, we gather that Dr. Millard is in favour of abandoning compulsory infantile vaccination (compare pages 186 and 189). Well we venture to think that if this reform (?) is ever carried into effect, the mortality from epidemic summer diarrhœa among infants will materially lessen—a conflagration dies out when fuel fails!

Another statement to which we take exception is that "individuals exposed to the infection of virulent smallpox will readily contract the disease, no matter how 'sanitary' the conditions under which they may be living" (page 44). This view is in direct opposition to Dr. Millard's reiterated opinion that infantile vaccination has one serious drawback, namely—that whilst mitigating smallpox it also disguises it, and in this way tends to spread the disease. So it would appear that individuals exposed to the infection of mitigated smallpox also will readily contract the disease.

The prevention of smallpox, if we may presume to express an opinion based on a far-reaching experience of the disease, depends on three things—an aseptic primary vaccination in infancy, an aseptic secondary vaccination approaching puberty, and *of course* sanitation in the fullest sense of the term.

J. W. MOORE.

Pain: Its Origin, Conduction, Perception and Diagnostic Significance. By RICHARD J. BEHAN, M.D., Dr. Med. (Berlin). New York and London: D. Appleton & Co. 1914. Large 8vo. Pp. xxviii. + 920.

WE are unacquainted with any publication which attempts to deal with the study of pain in so widely comprehensive a manner as this book by Dr. Behan. It is a subject on which a most fascinating book might be written—but a book that would be extremely difficult to write. The

author has surmounted this difficulty in part. At the end of the book is an excellent bibliography of works relating to pain. This in itself shows the painstaking care and industry of the author and his desire to be thorough and to give credit where it is due. But his very respect for authorities, we think, gives a general impression of disjointedness in the work as a whole. One feels always it is a compilation. The whole expression is a little incoordinate. Its individual parts are excellent but somehow they fail to work together as we imagine they might have been made to do. In fact Dr. Behan has given us too much of his authorities' and too little of his own brains. The Scotch lawyer who made up his briefs by reading all the facts and then letting them, as he said, "whammle in his wame" overnight, giving his own account of the the case next morning, deserves more copying than he gets. This it is which makes the first few pages tedious, and some of the later chapters too long.

Pain the result of disease in every organ and tissue is carefully recorded and explained. The structure of the nervous system in so far as it relates to sensation is well described and many good diagrams are given. Head's views on segmental areas and on peripheral sensibility are adopted. They held the field at the time this section of the book was written doubtless; but even if they enjoy the author's approval some addendum reference is due to the contradictory views of Trotter and Davies which were published in 1913.

The pains of disease primarily in organs other than the nervous system are fully dealt with. In many instances tables are inserted to show by what concomitant conditions differential diagnosis between one disease and another may be made. Such an example faces page 550. One which seems still more gratuitous faces page 585. It would have been wiser to have used these folded leaves to give larger impressions of the cramped small-printed diagrams on, for example, page 13. Still we can see that this addition may enhance the value of the work in the opinion of many.

The book is plentifully illustrated, and the majority of the illustrations are good. We are old-fashioned (or prudish) enough to regret the insertion of figures 40 and 41. We should not complain much if we could see what they are supposed to show—in witness whereof we do not cry out against the brazen representations on pp. 308 and 309. We hope the author will not think our series of objections are intended as hostile criticism of his book. That is not at all our wish. We think the book is distinctly a good and useful one and we can recommend it as such. But we hope we shall be better pleased with the second edition. F. C. P.

On the effects of Volcanic Action in the Production of Epidemic Diseases in the Animal and in the Vegetable Creation, and in the Production of Hurricanes and Abnormal Atmospherical Vicissitudes. By H. J. JOHNSTON-LAVIS, M.D., D.Ch., M.R.C.S. Eng.; L.S.A. Lond.; F.G.S.; Author of many works on Medicine and Vulcanology. London: John Bale, Sons & Danielsson, Ltd. 1914. Cr. 8vo. Pp. xii. + 67.

IN the twentieth century of the Christian Era it is no easy task to strike out an entirely novel line of research and to advance the claims of a new branch of science to be so considered. This Dr. Johnston-Lavis has attempted to do in the small monograph before us, and not in vain.

The work is really the essay which some months ago won the triennial Parkin prize of £100 of the Royal College of Physicians of Edinburgh. The subject set for the prize forms the title of the essay. It is one which possesses special interest for the dwellers in volcanic countries, such as Iceland, Italy, and—in the British Empire—New Zealand and other Colonies.

The essay includes a short introduction and seven chapters, of which latter the subject-matter is in sequence: physics of eruption, chemistry of eruption, the physical effects of eruptions on human beings and animals, a small

selection of citations of different authors as to the supposed relationship of eruptions to epidemic diseases of man, animals, and plants, the physical effects of eruptions on plant life, the influence of eruptions in the production of hurricanes and abnormal atmospheric vicissitudes, and general conclusion.

One of the most interesting quotations from old writers on the supposed connection between eruptions and epidemics is a letter from Dr. Giovanni Vivinzio to Padre G. M. de la Torre, written in the year 1755. In that letter the writer gives an admirable account of an extremely fatal outbreak of pneumonia which visited a group of towns lying some ten Italian miles north of Vesuvius at the beginning of February, 1755. The outbreak coincided with the setting in of a south wind, blowing from Vesuvius, which had been in active eruption since December 2, 1754. "I judged," wrote Vivinzio, "that this extraordinary malady must be attributable to the smoke which issued, then in abundance, from the summit of the volcano and from the lava streams."

In Chapter VII., however, Dr. Johnston-Lavis gives good reasons for the opinion which he holds strongly—that there is no *direct* relationship between volcanic eruptions and disease in man or animals. He considers, at the same time, that there are several *indirect* ways in which epidemic diseases may be brought into existence, or, at any rate, accelerated by volcanic outbursts. Such predisposing causes of disease as are connected with eruptions are mentioned at page 63.

Again, "if we audit the accounts for good or evil to plant life," the author thinks that "we shall be safe in saying that there is much on the credit side," for "although damage may be done to vegetation by the fall of dust and lapilli, the complete destruction of worms, snails, insects and parasitic fungi must be eventually a great asset to the revived plant life of the region."

And lastly, "beyond the condensation effects from the dust and gases, the rendering of the atmosphere a little more opaque to the sun's rays, the coincident sun and moon

appearances with some magnetic disturbances, no great meteorological commotion can be laid to the account of volcanic eruption." Dr. Johnston-Lavis finds, therefore, that the indictment against volcanic action as pestilent is not sustainable.

His essay is very entertaining and instructive reading, and his conclusions may be accepted without cavil.

Spiritual Healing. Report of a Clerical and Medical Committee of Inquiry into Spiritual, Faith, and Mental Healing. London : Macmillan & Co., Ltd. 1914.

WE cannot feel that this report throws much light on a difficult subject, though it is satisfactory to find that a combined Committee of clergy and medical men are of opinion, after weighing much evidence, that so-called "spiritual" healing does not differ from healing by so-called "suggestion." The Committee is further of opinion that spiritual healing can be expected to be permanently effective only in cases of what are generally termed "functional" disorders. This conclusion is also satisfactory, not so much to medical men—who for the most part long since arrived at the same opinion—but to the laity, who we trust will accept it as authoritative. Some of the evidence published in the second part of the report is of interest. We commend its perusal to all interested in the subject. For ourselves, like Dr. Lloyd Tuckey, we would like to think that spiritual healing, in the sense of healing brought about by miraculous divine help, existed, but we have no personal experience of it.

Anoci-Association. By GEORGE W. CRILE, M.D., and WILLIAM E. LOWER, M.D. Edited by AMY F. ROWLAND. Philadelphia and London : W. B. Saunders Company. 1914. 8vo. Pp. 259.

THE somewhat cryptic title of this book will prepare the reader for a number of strange—may we say barbarous ?—words and expressions which he will meet with in its

pages, and which will almost make him wish its authors had supplied an explanatory glossary such as is appended to accounts of travels among gipsies or stories where some of the characters discourse in "Thieves' Latin" or other idiom not understood by the general reader. We think it a pity that while so many American authors write the purest and noblest English, it is too common to find their countrymen who write on medical subjects expressing themselves in a language which is not English or anything else.

The work before us is divided into two parts. The first is theoretical, and gives a statement of the author's "Kinetic Theory of Shock"; while in the second part we have a description of the treatment and prevention of shock by anoci-association.

Now, what is anoci-association?

"When a barefooted boy steps on a sharp stone there is an immediate discharge of nervous energy in his effort to escape from injury. This is not a voluntary act. It is not due to his own personal experience (his ontogeny), but is the result of the experience of his progenitors during the vast periods of time required for the evolution of his species (his phylogeny). The wounding stone made an impression upon the nerve receptors in the foot similar to the innumerable injuries which gave origin to this nerve mechanism itself during the boy's vast phylogenetic or ancestral experience. The stone supplied the phylogenetic association and the appropriate discharge of nervous energy automatically followed."

Every adequate stimulus awakens an association, and these are either injurious to the individual "*noci-associations*," as in the above example, or beneficial, as in the flow of saliva at sight of appetising food "*bene-associations*."

"All life is made up of bene- and noci-associations, and the constant effort of the race and of the individual is to increase the former and decrease the latter, to develop an environment which shall as far as possible be free from *noci-association*—to reach a state of *anoci-association*."

These efforts include everything from opening an umbrella when it rains or bolting the door against burglars, up to the development of antitoxins and phagocytosis in the body.

"In the beginning of human history man in common with most animals had two principal methods of self-defense (*sic*) against the dangers which surrounded him—he fought or he ran away. It is therefore the motor mechanism in particular which through its phylogenetic association with injury to the individual is responsible for the discharges of energy which are occasioned by the presence or even the thought of danger. These discharges of energy, when intense enough or protracted enough, produce the extreme conditions called exhaustion and shock. In other words, shock is the result of the *excessive conversion of potential into kinetic energy in response to adequate stimuli.*"

According to this kinetic theory of shock, the essential lesions are to be found in the cells of the brain, suprarenal capsules and liver, and are due to excessive katabolism or conversion of potential into kinetic energy at the expense of chemical substances stored in the cells of these organs. The actual motion may not take place, but yet the changes in the brain and glands occur, and the shock is the same. The "nerve ceptors" whose stimulation causes this discharge of energy may be the "contact ceptors" in the skin or the "distance ceptors" in the organs of special sense. The stimuli, if sufficiently numerous or intense, lead to exhaustion. If they lead to obvious work the depletion of the vital force expresses itself as physical exhaustion.

"If the expenditure of vital force is due to traumatic or to psychic stimuli which lead to no obvious work performed, especially if the stimuli are strong and the expenditure of energy is rapid, the condition is designated *shock*. Shock may therefore be produced by different causes, such as fear and worry, physical injury, infection, hæmorrhage, excessive muscular exertion, starvation, insomnia."

The changes in the brain and glands caused by shock

and exhaustion from any cause whatsoever seem to be identical. The effort of the surgeon should be to develop the shockless operation through anoci-association, or by cutting off from the brain noci impulses.

The authors appear to have done an immense amount of laboratory work and to have "traumatised" an enormous number of animals. It is much to be regretted that they have not given any particulars of their experiments, not one of which is described in detail. We cannot but think that the nomenclature employed is unfortunate. The involuntary withdrawal of the foot when irritated is an associated nervo-muscular or reflex act quite as beneficial to the individual as is the dribbling of saliva at the sight of food, and therefore seems to us to deserve as well to be called a "bene-association."

As to the anatomical changes in the glands and brain caused by centripetal nervous impulses we should like to know more. The changes in the suprarenals and liver, which are said to be associated with increased discharge of adrenalin and of glycogen respectively, are not minutely described, but are figured in some of the very numerous excellent plates with which the book is illustrated. The changes in the brain cells consist in, firstly, a stage of hyperactivity characterised by hyperchromatism, and later a stage of exhaustion shown by chromatolysis, alteration of nucleus-plasm relation, rupture of the nuclear and the cell membranes, and finally disintegration.

The changes are most marked in the cortex and the cerebellum, but are present also in the medulla and the cord. They are absent when the trauma is limited to territories disconnected from the brain by section of the cord or by local "anesthetization." If two dogs had their circulations crossed, so that practically the same blood circulated through the two animals, and one was submitted to "traumatization," the anatomical changes were found only in the latter, showing that they were due not to the condition of the blood, but only to the nerve influence.

The brain changes are depicted in several, mostly

coloured, plates. The figures are all of cerebellar preparations which appear to have been made by the methylene blue method. It would be interesting to know whether the changes in the cortex cerebri were uniform throughout, or more marked in the sensori-motor regions than in the so-called "associational or psychic areæ," and whether they showed any localised difference according to the part of the body submitted to the trauma. We may add that, with the exception of these anatomical changes, there is apparently no evidence adduced of increased conversion of potential into kinetic energy in the brain cells.

There are several very interesting statements on which we should be glad to have had further information. Thus we read of a decapitated dog in whom the circulation was maintained for eleven hours by injection of adrenalin, we presume with the aid of artificial respiration. The different amount of shock produced by different kinds of injury is full of interest. Those injuries to which successive generations of animals have been longest submitted, such as crushing and tearing, have, by evolution, come to produce most shock, while those forms of injury to which we have only recently become exposed produce much less. Thus ordinary burns cause great shock, while burns by *x*-rays do not; slow perforation causes shock, the rapid passage of a modern rifle bullet does not (there are probably a good many poor fellows at the present moment who would deny this statement); dragging on the mesentery or intestine, which resembles the distension of flatulence, causes shock, while cutting with a sharp knife or burning of the mesentery or intestine, an altogether unnatural form of trauma, does not. Indeed the work is full of most interesting and suggestive matter, however we may be inclined to differ with some of the theoretical views put forward.

But in the second part of the work practical surgeons will find matter of the highest interest—for whatever the fate of the theories may be, the practice of the authors has had the most brilliant results. As regards the

anæsthetic a preference is given to nitrous oxide and oxygen. The method of using this gas mixture is described by Miss Hodgins, the chief anæsthetist at the Lakeside Hospital; and Dr. Warner, the superintendent, describes and figures the great apparatus for the manufacture and storage of the gases. This anæsthetic has been used 34,964 times without accident. Other anæsthetics are not, however, excluded. The nitrous oxide inhalation is usually preceded by hypodermic injection of morphine and scopolamine, and ether is, when necessary, mixed with the gas inhaled. Spinal anæsthesia in abdominal operations does not meet with favour; it lowers blood-pressure, leaves the still conscious patient exposed to psychic strain, causes headache, and is followed by a higher mortality than occurs with nitrous oxide.

When the patient is under the anæsthetic the "noci impulses" from the "distance ceptors," that is those brought by the special senses, are cut off from the brain, which, however, still receives the traumatic noci impulses or those coming from the seat of operation. To stop these local anæsthesia is employed. Before division each tissue is injected with novocaïn, and injections of quinine and urea hydrochloride are made at a distance from the wound. The effect of this latter anæsthetic lasts for some days, so that the patient's brain is free from noci impulses originating in the wound until the healing is well begun.

Besides these methods of interrupting the noci-impulses the greatest stress is laid on the importance of making the injury as small as possible, by the use of sharp instruments, clean incisions, avoidance of tearing, crushing or dragging on the tissues, as is too often done in what the authors call "carnivorous operations."

Special chapters are devoted to the technique to be employed in the most important classes of operations, and the descriptions are illustrated by numerous admirable plates. The details must be read in the work itself, and should be carefully studied by every surgeon.

Now, what is the advantage of this method? In what way does the "anociated patient" profit above one

treated by ordinary methods? If we judge the tree by its fruits the advantages of the anoci method are very great, for, besides a recovery undisturbed by post-operative troubles, the mortality is greatly diminished.

"A study of the statistics of the Lakeside Hospital shows that in 1908, the year before the adoption of the principle of *anoci-association*, the mortality rate of all operations performed by the authors and their resident staff was 4.4 per cent.; in 1912 the mortality rate had fallen to 1.9 per cent.; and last year, 1913, to 1.8."

As the authors' experience has been gained by the practical treatment of over 20,000 surgical cases, these statistics are of great value.

While congratulating the authors on their success, we would cordially recommend their book to the attention of all surgeons.

The Biology of the Blood Cells, with a Glossary of Hæmatological Terms: for the Use of Practitioners of Medicine. By O. C. GRUNER, M.D. Lond., Pathologist to the Royal Victoria Hospital, and to the Maternity Hospital, Montreal; Assistant Professor of Pathology, M'Gill University, Montreal, &c. Bristol: John Wright & Sons, Ltd. 1913. Pp. xii + 392. With 75 figures and 7 coloured plates.

THE title page describes this work as "for the use of practitioners of medicine," and the preface informs us that it is intended to serve as companion to any of the larger text-books on hæmatology, but when he has got through this volume in the intervals of his practice, the practitioner will certainly need a good rest before going any further in his studies of the subject. The glossary contains more than eight hundred hæmatological terms from "agranuloplastic" and "aleukæmic malignant lymphadenoid lymphadenoma" to "Wolff's pseudomast cell," "xanthophile" and "Zoja's hæmocytoblast."

The writer acknowledges his indebtedness to Pappenheim, and it is evident that he adopts very fully the

ideas of the latter ; so that for those of us who take an interest in the subject, but, not being good German scholars, find it a labour to wade through the pages of Pappenheim's Atlas and of the Folia Hæmatologica, it is a comfort to get so much of his most important work in our native tongue. Modern hæmatologists are divided into two camps as dualists and unitarians. To the latter of these groups the author belongs, holding as he does that both red and white cells are derived from the one type of primordial cell, the lymphoidocyte, found in the spleen, bone-marrow, and other hæmatopoietic tissues. Blood-cells are divided into primordial, red, lymphatic, monocytic, neutrophilic and phlogocytic forms, the last-named including those characteristic of non-suppurative inflammatory cell infiltrations and usually, of course, only found in the tissues. The life history of each of these main groups of cells is followed, noting the changes which occur from the time of their birth to that of their death, and the effect upon them, and upon the tissue in which they are found, of pathogenic and other influences.

As one reads the whole subject becomes clearer, and it is possible to grasp the fundamental connections between the cells, and to understand a little more of the relation between the pathological condition of the blood-forming tissues in "blood diseases," and the appearances which may be observed in blood counts and in film preparations of the blood.

The Dublin University Calendar, for the Year 1914–1915, *to which are added the Ordinary Papers set in the Year* 1913–1914. Volume I. Dublin : Hodges, Figgis & Co., Ltd. 1914. 8vo. Pp. viii + 66* + 348 + cxxxvi.

The first volume of the Dublin University Calendar for the coming academic year was published in good time at the middle of September. It proceeds on much the same lines as in previous years, but the Undergraduate Ordinary Examination Papers are now paged separately from i to cxxxvi.

In the other parts of the volume, full information is

given as to the Ordinary and Honour Courses in Arts and in the Professional Schools.

Since the publication of the Calendar the University has sustained a grievous loss in the death on Friday, September 18th, of Robert Yelverton Tyrrell, Litt.D., the Senior Dean and Catechist, and President of the Special Court of Examiners in Classics for Moderatorships, Fellowships, and Scholarships; and still more recently in the death, on Thursday, October 15th, of the Provost, Dr. Anthony Traill.

Mr. M. W. J. Fry, the Editor, is to be congratulated on the fine volume before us, which is a credit also to the University Press and to the Publishers.

Clinical Examination of the Blood and its Technique. A Manual for Students and Practitioners. By PROFESSOR A. PAPPENHEIM, Berlin. Translated and adapted from the German by R. DONALDSON, M.A., M.B., F.R.C.S.Ed., D.P.H.; Pathologist, Royal Berks Hospital, Reading, &c. Bristol: John Wright & Sons, Ltd. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. Toronto: Macmillan Company of Canada, Ltd. 1914. Pp. ix + 87.

THE main value of this little book consists in the two coloured plates placed at its beginning. These plates, with the explanatory details contained in the earlier pages of the text, give the reader a summary of Pappenheim's well known views concerning the varieties of white cells and the relationship which exists between these varieties. The remainder of the book summarises in rather stilted and technical language the essentials of ordinary blood examination, and in addition a short account is given of the changes to be met with in the blood in most of the special blood diseases.

For our part we think that this translation was hardly called for, except that it makes more generally procurable, as already stated, a short account of the author's views concerning the origin and varieties of the leucocytes.

PART III.

SPECIAL REPORTS.

REPORT ON MEDICINE.

By T. Gillman Moorhead, M.D., F.R.C.P.I.; Physician to the Royal City of Dublin Hospital.

I. DIAGNOSIS OF PANCREATIC DISEASE.

Sladden contributes an important critical review on this subject. He points out in the first place that ordinary clinical observation is seldom of use, but that deep-seated epigastric pain not controlled by taking food, and radiating to the left shoulder blade, is very common. Massive stools may also be observed, accompanied by wasting, anæmia, and tenderness over the middle of the right rectus muscle. Oxaluria is not regarded as important. The more important tests for pancreatic function are divided into :—(1) Tests of the external secretion, dependent on the presence or absence of ferments of the pancreatic juice; and (2) Tests dependent upon other functions of the pancreas. The former includes :—(1) Duodenal intubation. This test is too disagreeable for general application : when used a positive finding is more important than a negative, *i.e.*—if trypsin be found it points to normal pancreatic function, but absent trypsin may be due to admixture with gastric juice. (2) Azotorrhœa. This requires careful chemical examination to determine, but there seems little doubt that azotorrhœa is a common feature of pancreatic disease. The finding of undigested muscle fibres (creatorrhœa) in the faeces is also suggestive. (3) Steatorrhœa, when accompanied by a low percentage of split fat, is strong presumptive evidence of pancreatic disease. Steatorrhœa by itself may merely mean biliary insufficiency or intestinal anomalies of absorption. (4) Estimations of trypsin, diastase and of lipase in the faeces may be made. Diminution of any or all of these points to

pancreatic insufficiency. Under the second heading are included (1) Glycosuria. As regards this it can only be stated that a lowered glucose tolerance suggests pancreatic disease. The Cammidge re-action and its modifications, though interesting, are not at present of diagnostic value. (2) A high diastatic value of the urine offers considerable presumptive evidence in favour of pancreatic disease, while a low or normal value, provided there is no renal disease, indicates a healthy pancreas. (3) Adrenalin mydriasis (Loewi's test) is in favour of pancreatic disease, and its ease of application makes it worth a thorough trial.—*Quarterly Journal of Medicine*, July 1914. Vol. VII. No. 28. Page 455.

II. PATHOLOGY OF CHRONIC HYDROCEPHALUS.

Margulis has made a careful anatomical investigation of some cases of chronic primary hydrocephalus, and finds that the cause of the condition consists of a hypertrophy of the ependyma, along with proliferation of the perivascular connective tissue and the adventitia of the vessels themselves. In inflammatory hydrocephalus inflammatory changes in the choroid vessels, in the ventricular wall and in the white substance of the cerebrum are found. In the primary cases the general periependymal gliofibrosis results in the formation of fibrous lamellæ which prevents the cerebro-spinal fluid from escaping and alters the elasticity of the wall itself. The condition is quite incurable, and is often associated with syringo-myelia, a disease which has as its basis an analogous histological formation.—*Archiv. für Psych.* Bd. 50. (1).

III. THE ACTION OF POTASSIUM AND SODIUM IODIDES ON THE VASCULAR SYSTEM.

Macht reports some important investigations on the action of iodides on the heart and blood vessels. He finds :— (1) That the potassium ion produces a relaxation of the blood vessels and a marked depression of the heart; (2) that the sodium ion has a slight constricting action on the blood vessels and slightly stimulates the heart; and (3) that the iodine ion is a powerful stimulant to both

heart and blood vessels, but that this stimulating effect is greatly inhibited in the intact animal by the chemical combination of the iodine with the proteids of the blood. The action of sodium and potassium iodides is best understood from the action of their component factors. Sodium iodide has no depressing property, for the sodium ion is a stimulant and so is the iodine, in so far as it is free to act. Potassium iodide on the other hand clearly shows the depressing effect of the potassium ion on the heart and vessels, not only on isolated organs but also in the living animals. It is, therefore, not a matter of indifference which of the iodides is to be chosen for depressing the circulation. Furthermore, as far as this evidence goes it is not the iodine that acts but rather the potassium, and the effect could probably be produced even more efficiently by other potassium salts.—*Johns Hopkins' Hospital Bulletin*, Sept. 1914. Page 278.

IV. A NEW TEST FOR INDICAN.

Jolles describes the following new test for indican. Take 10 c.cm. urine and add to it 2 c.cm. of a 20 per cent. solution of sugar of lead. Shake well and filter. To the filtrate add ½ c.cm. of a 10 per cent. alcoholic solution of thymol, 10 c.cm. of hydrochloric acid containing iron chloride (Obermeyer's reagent), and 4 c.cm. of chloroform. Shake well and allow the chloroform to settle down. If indican be present even in minute quantity the chloroform will assume a beautiful violet colour.—*Zeits. f. physiol. Chemie.* Bd. 87. H. 4. S. 310.

V. BACTERIA FOUND IN MILK HEATED TO VARIOUS TEMPERATURES.

Ford and Pryor publish their investigations on this subject and formulate the following conclusions:—(1) Milk always contains the heat-resistant spores of aerobic and anaerobic bacteria, which by their development can give rise to disagreeable, unwholesome, and as an article of diet, dangerous changes in the milk. The aerobic most constantly present is the Bacillus aerogenes capsu-

latus. (2) These changes take place in milk heated to any temperature from 65° C. to 100° C., and kept at any temperature from 22° C. to 37° C., but not at that of the ice box, 4° to 6° C. The spores, however, survive in milk for long periods, even when kept on ice, and can initiate the changes referred to when the temperature of the milk is changed. (3) In heating milk there is a danger zone ranging from 65° C. to 85° C. Between these temperatures the lactic-acid-forming bacilli are destroyed, and hence the inhibiting action which these bacilli exert on the harmful spore-forming bacteria is removed. Further, clotting of milk is really a protection to the milk consumer, because the fact of clotting and turning soon indicates that the milk is not fresh and is to be avoided. The safest milk is that which has been boiled for 10 to 30 minutes, and has then been kept on ice. In such milk the organisms giving rise to explosive and putrefactive changes are destroyed. (4) It is however essential that milk heated from 60° C. to 100° C. should be kept on ice, since heated milk is far more liable to decompose than new milk.—*Johns Hopkins' Hospital Bulletin.* Sept. 1914. Page 270.

VI. SYPHILIS OF THE STOMACH.

MEYERS records a case of this which had come under his own observation, and tabulates fifty-eight other cases from the literature. He points out that syphilis of the stomach may appear in three forms—(1) as a syphilitic ulcer; (2) as a gumma; (3) as a diffuse gummatous or fibrous infiltration. Combinations of the above may also be seen. The disease may be congenital or acquired, and is most common in men of about middle age. Multiple foci in other organs may be present. The symptoms are not distinctive, but the following are suggestive when a positive Wassermann test is obtained :—(1) Pain immediately after food. (2) Dilatation of the stomach. (3) Pain on pressure over the stomach. (4) Gastric hæmorrhage.—*Intern. Beitrage z. Pathol. u. Therapie d. Ernährungstörungen.* Bd. 4. S. 432.

VII. AGGRESSINS IN APPENDICITIS.

A. D. Gardner defines the term aggressin as any substance formed in the process of bacterial growth which aids the organisms in their attack upon living tissues. As a result of numerous investigations he concludes that: (1) Aggressiveness is the direct consequence of a profuse multiplication of bacteria. The greater the number of bacteria, the more likely is the fluid to act aggressively. (2) Early exudates therefore (first twenty-four hours) are never aggressive. (3) Aggressive substances are nearly always present in pus from appendicular abscesses, and they do no harm so long as the abscess wall remains intact. But they may play an important and dangerous part when a channel of communication is formed between the abscess cavity and the general peritoneum. (4) In spreading or already diffuse peritonitis, the formation of aggressive bodies, signifying as it does great bacterial activity, marks the onset of a graver stage of the infection. (5) A consideration of aggressins, their origin and their action, suggests that a discriminating use of bactericidal chemicals may be of great value in the surgical treatment of peritonitis. In ether and colloidal silver we have two such bodies which have undergone a successful trial.—*Quarterly Journal of Medicine*. July 1914. Vol. VII. No. 28. Page 339.

VIII. SPLENECTOMY IN MALARIA.

Kopylow holds that splenectomy is indicated in malaria in the following circumstances:—(1) In splenic tumours with torsion of the pedicle. In these cases the operation is one of surgical urgency and must be undertaken to avert a fatal result. (2) In cases of very large floating spleens. Under these circumstances the operation is comparatively easy, and averts torsion of the pedicle and other serious accidents. (3) In cases of very large, painful spleens, as in these cases medical treatment is unavailing. As contraindications he mentions severe cachexia, dropsy with dilated heart, anæmia with hæmoglobin under 40 per cent., atrophic cirrhosis of the liver, and the existence of strong adhesions binding the spleen to stomach or dia-

phragm. The operation consists of opening the abdomen, ligaturing the pedicle, separating adhesions, and delivering the tumour. He believes that the operation will be practised much more frequently in the future than in the past.—*Archiv. für. klin. Chir.* Bd. 101. H. 3.

IX. URTICARIA FOLLOWING SALVARSAN INJECTIONS.

LIER reports two cases in which a very intractable urticaria developed after several intravenous injections of salvarsan. The strong probability of the salvarsan being the causative agent was shown by the prompt exacerbation of the disease produced by the injection of very small quantities of the drug. On the other hand, injections of neosalvarsan were without influence. In neither of the patients did the disease show the least response to the usual curative measures.—*Wiener med. Wochenschrift.* 1912. No. 46.

X. VACCINES IN TYPHOID FEVER.

RAYNAUD and others report the results obtained during the course of a year by treating typhoid patients with Besredka's sensitised living typhoid vaccine. Altogether they observed thirty-seven cases. At first two injections of one and two cubic centimetres respectively were given at an interval of eight days. Later the injections were increased to three and four given at three day intervals. The injections were always well borne and did not temporally increase the symptoms of the fever, but produced a decided local reaction. All of the thirty-three cases recovered, but the length of the sickness varied a good deal. When the injections were started, in the first five days the fever ended quickly; the average duration of the sickness was twenty-four days in cases in which the treatment was started between the sixth and the tenth day. In a similar epidemic the mortality in non-vaccinated cases was over 8 per cent., while the relapses were 9.7 per cent. against 5.4 per cent. in treated cases. The bactericidal power of the serum in treated cases was much stronger than in non-treated cases.—*Comptes rendus.* 1912. D. 2.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Walter G. Smith, M.D., F.R.C.P.I.
General Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF OBSTETRICS.

President—M. J. Gibson, M.D.
Sectional Secretary—Gibbon FitzGibbon, M.D.

Friday, May 22, 1914.

The President in the Chair.

Exhibits.

Uterus Removed for Concealed Accidental Hæmorrhage.

Dr. Jellett said the specimen shown was removed from a patient, aged twenty-five years, who was admitted to the Rotunda Hospital on the 9th of May, 1914. This was her sixth pregnancy. The previous history was one abortion, one premature, and three full term, all with normal labours. On the day of admission she had some hæmorrhage, and was plugged by a doctor in Dublin before being sent into hospital. When admitted she looked fairly well, with a pulse of 104. The plugs were removed, and as there was no subsequent hæmorrhage the patient was left alone. After three hours a little blood came from the vagina, and the patient was emphatic that the uterus had got much larger. It was then nearly up to the ensiform cartilage. She was an extremely anæmic woman, and appeared not to be able to stand any loss of blood. Examination showed the membranes presenting through the cervix, and as the conclusion had been formed

that the patient could not afford further loss of blood and was suffering from concealed accidental hæmorrhage the abdomen was opened and the uterus removed. Everything went on satisfactorily afterwards. Examination of the specimen showed that the diagnosis of concealed accidental hæmorrhage was right. The specimen was described and the features of interest were pointed out.

Sir William Smyly said the specimen was, so far as he knew, unique, and suggested that it ought to be put up in a permanent form. He had no doubt that the treatment described was the correct one. He agreed with a remark that had been made that uterine hæmorrhage could always be stopped by removing that organ, and thought it was perfectly right to do so if the hæmorrhage could not be stopped in any other way.

Dr. Sheill said the operative treatment was undoubtedly correct. He pointed out that in spite of the blood-pressure at the site of the blood clot the wall was thicker there than on the other side, and he was, therefore, disposed to the view that although the treatment carried out was the correct one plugging might also have been satisfactory. Another point of interest was that the placenta was bent over, and appeared to have been in that state for some days. He would like to know whether the hæmorrhage had started some days before it was noticed.

The President referred to his experience in five cases of severe concealed accidental hæmorrhage. He said that in every case a certain amount of blood had escaped externally, the uterus had increased in size, was hard and tender, and the patients' condition could not be accounted for by the amount of blood lost externally, nor by any other acute abdominal attack. He considered that the hæmorrhage in these cases could not be controlled either ante-partum or post-partum except by hysterectomy. When such a rapidly over-distended uterus is emptied, post-partum hæmorrhage leads to the death of the patient.

Tubercular Tubes.

Dr. Spencer Sheill showed a specimen of tubercular tubes removed from a patient who was married five years, had no pregnancy, and enjoyed fair health. She developed symptoms of endometritis, and curettage was carried out by a

doctor in England with no good result. When he (Dr. Sheill) was consulted he diagnosticated tumour and recommended immediate operation. There were no special points of interest in the operation except that it was fraught with difficulty due to old adhesions. The two specimens shown were removed, one consisting of the right tube and ovary, and the other of the right tube only. He spared the second ovary, with the intention of suturing it to the cornu of the uterus, but it was found adherent to the back of the uterus, and he was obliged to leave it. A point of interest in connection with the case was that the patient's sister consulted him seven years ago, and he diagnosticated tubercular tubes, and advised operation which was refused, and she died of consumption two years ago.

Dr. Gibbon FitzGibbon said he did not altogether agree with Dr. Sheill's method of treatment of tubercular tubes. In a somewhat similar case he cleared out the pelvis, taking tubes, ovaries and uterus, as he did not see how one could expect the tubercular disease to be restricted to the tubes alone. He considered it better for the patient to clear out the uterus in order to avoid the risk of leaving tuberculous infection in the uterus. He was reluctant to try conservative operations in tubercular disease of the tubes where it was so extensive as in the specimen shown.

Sir William Smyly said he agreed with Dr. Sheill in leaving the ovary. Pelvic tuberculosis, he believed, had never been proved to be primary. It was looked upon by the best pathologists to be always secondary, and at the meeting of the German Gynæcological Association in Munich it was positively stated by the Reporters that such a thing as a primary pelvic tuberculosis had never been met with—*i.e.*, if a thorough examination of the patient's body was made one would be bound to find tuberculosis in some other part. He did not, therefore, think that by taking out the tubes the patient would be prevented from getting pulmonary tuberculosis. He believed that the removal of the tubes, when full of pus, was absolutely necessary for the health of the patient, but he did not consider it necessary to remove the uterus, ovaries, or other organs. He pointed out that the direction in which the infection spreads was always downwards, and it never extended along the mucous membrane upwards, but always in the direction of the stream. It was,

therefore, an infection from the blood, and not from the air. Some time ago it was stated that the opening of the abdomen cured tubercular disease, because the patients remained well for years, but he suggested that if the history was studied it would be found that they were just as well before the operation as they were afterwards. On the whole, he did not think that pelvic tuberculosis was a very dangerous disease, but one which ran a chronic course.

Dr. Jellett agreed with Dr. Sheill as regards saving the ovaries, but at the same time he considered pelvic tuberculosis was most dangerous. Within the last six months he had seen a great deal of pelvic tuberculosis; in fact more than many gynæcologists in England considered existed in the whole British Isles! He considered that pelvic tuberculosis, which was operated upon, offered a good prospect of cure, but that when not operated upon it leads to serious results. He mentioned a case on which he had operated recently in which the patient had no symptoms, but had a very large necrotic mass lying in Douglas' pouch behind the uterus with complete destruction of the appendages. Where necrosis had started he considered the condition dangerous. When operating in the early stage of tubercular tubes he thought the uterus should be left unless it was affected also, and, as the ovaries were very rarely affected, they should also be left.

Sir William Smyly, subsequent to Dr. Jellett's remarks, said that he held that cases of tuberculosis of the tubes were serious, and ought to be operated upon, but he did not think that tuberculosis of the other pelvic organs was serious.

Dr. Solomons said cases are sometimes met with where part of the tube is healthy and may be preserved. The only reason he could see for removing all the organs was the eugenic one. He inquired if the fact that the patient's sister had died of consumption was the only reason why Dr. Sheill diagnosticated tubercular tubes.

Dr. Rowlette said that they were not in a position to judge what proportion of cases of tuberculosis of the genital organs became dangerous, and from the results of *post-mortem* examinations the question seemed to be similar to that of tuberculosis of the lungs. It might be concluded regarding pelvic tuberculosis as with pulmonary that a very considerable proportion of cases got better without treat-

ment, but it was true that the disease, in a certain number of cases, became dangerous to life. Referring to treatment, it was not the custom to try to eradicate the disease by the knife in other parts of the body, and he did not see why this should be attempted in the pelvis. It was almost certain that when tuberculosis was found in one part of the body it was also present in another. He could not agree that in a case of pelvic tuberculosis one would be justified in clearing out all the pelvic organs, and even if it were necessary to remove the uterus it would scarcely be necessary to remove the ovaries, as it was rarely found that any traces of tuberculosis existed upon the surface of the ovary.

The President said that pelvic tuberculosis was a disease which generally tended to become cured. Examination of a considerable number of tubes which he had removed showed that the great majority were inactive. In cases of tuberculosis of the endometrium he had advised sanatorium treatment with good results. If he were called upon to treat a patient with tubercular tubes, and decided on operation, he would not remove more than the tubes if possible.

Dr. Sheill, replying, said as regards tubercular tubes it was not known whether the disease was primary or secondary, and an opinion, therefore, could not be formed as to whether it was desirable to remove other parts or not. The patient from whom the specimen was removed was troubled with pain in the region of the appendix. Referring to Dr. Solomons' remark regarding diagnosis, the presence of tuberculosis in a member of the family acted as a hint, but was not taken as conclusive evidence of disease existing in this patient. In addition to the operation of laparotomy being apparently a cure in cases of abdominal organs there was another reason which influenced him in deciding to operate—viz., the patient suffered from clammy sweats, which indicated active disease. Since operation these symptoms had disappeared. Had he found other organs diseased he would have removed them also.

Clinical Report of the Rotunda Hospital for the Year ending October 31st, 1913.

Dr. H. Jellett introduced this Report. It was published in the numbers of the Journal for July, August and September, 1914.

Dr. Sheill said it seemed a pity that two of the cases of Cæsarean section went septic, and as the point was an important one against such a valuable operation he would like to know if there was any apparent reason for the sepsis in these particular cases. He considered that the account given in Case I.—Inversion of the Uterus—was a severe criticism of the nursing staff. He looked upon the use of bullet forceps on the cervix as a bad practice, and suggested the use of an instrument which took a softer grip. Referring to the case of twins, one of which was a shoulder presentation, he asked if the word "neglected" was left out intentionally; he suggested that the second child should have been placed in position and not allowed to come to the stage of neglected shoulder presentation. He inquired the reason why sterilisation was performed in one case of Cæsarean section.

The result of the case of symphysis pubis appeared to him to prove the point against the argument of crippling the patient. Other points of interest in the report were the result of hysterectomy at term, and that only seven cases of post-partum hæmorrhage were recorded.

Dr. Solomons was sorry to notice that the Abderhalden test for pregnancy had not been tried. Looking at the Table—"Prolapse and Presentation of the Cord"—the results at first sight seemed unsatisfactory from the fœtal point of view. He wished to know if reposition of the cord had been tried. The number of destructive operations was greater than in other years. He asked if, in performing craniotomy, the Master still used the old Auvard's instrument. He expressed surprise to find in the gynæcological report that five ventral herniotomies were done. The number of myomectomies was a matter for congratulation, and he thought that this conservative operation was the one of all the operations which made gynæcology a separate subject. He noted that there were fifteen interpositions of the uterus reported, and he wished to know if there were any post-operative results forthcoming. Referring to the treatment of cystocele, he inquired what treatment was adopted in young women where one did not wish to tie or resect the tubes. He noted in the gynæcological mortality table that there were three cases in which the septic cases of outside practitioners had been admitted and plucky attempts made to save life at the expense of statistics.

Dr. FitzGibbon congratulated the Master of the Rotunda on the morbidity. The two deaths among the Cæsarean section cases were unfortunate. He referred to two cases of contracted pelvis in which external podalic version was performed, and inquired if it was for the contracted pelvis this was done and if the patient's measurements were known before this method was adopted.

The President asked why classical Cæsarean section had not been considered in some of the cases of unavoidable hæmorrhage. Version had been performed in both the intern and extern departments when the patient was collapsed. He considered that the vaginal plug and abdominal binder afforded the best treatment for placenta prævia when the patient is collapsed. That there was no case of accidental hæmorrhage in the hospital during the year he did not consider at all curious, as his experience had been that these cases were comparatively rare. He suggested that many cases of unavoidable hæmorrhage are considered to be accidental owing to the patients not being thoroughly examined under an anæsthetic.

He would like to know why podalic version was performed in the two cases of contracted pelvis—one with a true conjugate of 7.6 cm.; the other 7 c.m.—and whether there was any particular cause for the septic infection after Cæsarean section in two cases?

He considered the Table on "Eclampsia" useless. The severity of the cases could not be recognised from the number of fits alone. Information regarding the condition of the patient—the blood-pressure, the pulse-rate, the urine, and the amount of morphine given to each patient—would not have required much space, and would have made the Table instructive.

In the Report he noticed that it was stated that eight patients had more than one douche. His experience was that repated uterine douching for sepsis was bad treatment except in cases of putrid endometritis. He inquired when and why repeated douchings were ordered? He noticed that hysterectomy had been performed for two cases of sepsis, and would like to know the result, as his own experience had not been satisfactory.

He got the impression from the Report that operation in pyæmia had been reserved by the Master of the Rotunda

for cases with thrombosed veins, and he would like to hear his reason for this. He asked what was Dr. Jellett's experience after Wertheim's interposition.

The Table on "Destructive Operations" showed that amputation of the arm was done before decapitation. He looked upon the prolapsed arm as a great help in facilitating the decapitation. It was recorded that trachelorrhaphy was done only twenty-three times, and that amputation of the cervix was done one hundred and thirteen times. He would like to know whether it was found that the latter was more likely to prevent pregnancy. It was obvious that the Master of the Rotunda preferred shortening of the round ligaments to ventral suspension, and inquiry was made as to why he performed ventral suspension except when pregnancy was not possible.

Dr. Jellett, in replying, said that he had definite rules regarding the choice of ventral suspension or of Alexander's operation. If he opened the abdomen for a pelvic condition he invariably finished the operation by a ventral suspension. If a patient was sterile, or if there was any suggestion of disease of the appendages, he also performed a ventral suspension. In other cases of uncomplicated backward displacement he preferred Alexander's operation. He did not consider that amputation of the cervix interfered in any way with pregnancy, but then he never performed Schroeder's operation. Interposition was a most valuable operation, but it was incompatible with pregnancy, and so could not be done in younger women. Where this was so, he thought there was no other treatment for cystocele than an anterior colporrhaphy, with such other vaginal plastic work as was necessary. He considered that discomfort after interposition usually resulted from having interposed a uterus that was too large, and in such cases he now always excised a wedge-shaped piece before finishing the interposition. In one case he had to operate a second time on account of discomfort, and removed such a piece, the patient subsequently becoming quite comfortable. In the presence of a small uterus, and indeed in all cases, it was preferable to associate interposition with shortening of the utero-sacral ligaments. One saw cases of pyæmia in which there was no pelvic thrombosis, and in one such case he had got good results by simple ligature of the ovarian vein. He

was asked why version was done in contracted pelvis. Personally, he was not in favour of the operation, and he saw that in one of his cases the reason for it was that the hand was prolapsed beside the head. The number of destructive operations was unavoidable, as in all of them the child was dead, and there was difficulty in its delivery. He considered amputation of the arm in neglected shoulder presentation an incorrect procedure as a rule, but in one case in which the child was macerated he found it impossible to deal with the case in any other way. Under ordinary circumstances, however, the presence of the arm was an advantage, as it enabled the neck to be brought within reach for decapitation. The two deaths in the cases of Cæsarean section were due to peritoneal infection.

LITERARY NOTE.

Messrs. J. & A. Churchill announce for autumn publication the following new books:—"The Anatomy of the Human Skeleton," by J. Ernest S. Frazer, F.R.C.S.: with 219 illustrations, many in colours: now ready. "Medical Diagnosis," by Arthur Latham, M.D., F.R.C.P., and J. A. Torrens, M.B., B.S., M.R.C.P.: with about 100 illustrations, some in colours. "The Chemistry of Cyanogen Compounds and their Manufacture and Estimation," by Herbert E. Williams. "Bricks and Artificial Stones of Non-plastic Materials, their Manufacture and Uses," by Alfred B. Searle.

THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND THE ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

The following candidates, having passed the requisite examinations of the above Board on October 3rd, 1914, were admitted Diplomates in Public Health:—Hira Singh Anand, M.B., Ch.B. Edin., India: Cromwell Gamble, M.B., Ch.B. Edin., Ireland: James William Edington, M.B., Ch.B. Edin., Dowlan Coldingham: Stephen Ramchandra Rao, F.R.C.S. Edin., &c., India: Lakshmi Prasad Chaliha, F.R.F.P. and S.G., &c., India: John Hamilton Boag, M.B., Ch.B. Edin., Edinburgh.

SANITARY AND METEOROLOGICAL NOTES.

Vital Statistics.

For four weeks ending Saturday, October 3, 1914.

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ended October 3, 1914, in the Dublin Registration Area and the twenty-seven principal provincial Urban Districts of Ireland, was 17.3 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,205,280. The deaths registered in each of the four weeks of the period ended on Saturday, October 3, and during the whole of that period in certain of the districts, alphabetically arranged, correspond to the following annual rates per 1,000 :—

County Boroughs, &c.	Week ending				Average Rate for 4 weeks
	Sept. 12	Sept. 19	Sept. 26	Oct. 3	
27 Town Districts	**17.0**	**19.9**	**19.2**	**17.3**	**18.3**
Dublin Reg. Area ...	17.1	19.4	18.4	19.1	18.5
Dublin City	18.3	20.8	20.5	19.0	19.6
Belfast	18.0	19.7	22.1	17.4	19.3
Cork	17.7	19.7	22.4	14.3	18.5
Londonderry	12.7	14.0	22.8	14.0	15.9
Limerick	24.4	17.6	23.0	16.2	20.3
Waterford	22.8	13.3	17.1	17.1	17.6

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain

epidemic diseases registered in the 27 districts during the week ended Saturday, October 3, 1914, were equal to an annual rate of 2.6 per 1,000. Among the 133 deaths from all causes in Belfast were 1 from scarlet fever, 4 from whooping-cough, 1 from enteric fever, and 23 from diarrhœa and enteritis in children under 2 years. Included in the 21 deaths from all causes in Cork 5 were from diarrhœal diseases. Two of the 11 deaths from all causes in Londonderry were from diarrhœal diseases. Included in the 12 deaths from all causes in Limerick was one from scarlet fever. The 2 deaths in Tralee were from diarrhœa and enteritis of children under 2 years. One of the 4 deaths from all causes in Queenstown was from whooping-cough, and of the 2 deaths in Bangor 1 was from diphtheria, and 1 from diarrhœa and enteritis of a child under 2 years.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 406,000, that of the city being 310,467, Rathmines, 39,155, Pembroke 30,240, Blackrock 9,197, and Kingstown 16,941.

In the Dublin Registration Area the births registered during the week ended October 3 amounted to 199—102 boys and 97 girls, and the deaths to 154—71 males and 83 females.

DEATHS.

The total deaths registered, numbering 154, represent an annual rate of 19.8 per 1,000. The annual rate for the past forty weeks was 22.5 per 1,000, and the average annual rate for the corresponding period of the past ten years was 22.8 per 1,000 of the mean population for all deaths registered.

Among the deaths registered are 1 each from enteric fever, whooping-cough and diphtheria, and 12 deaths from diarrhœal diseases, the last number including 11 deaths from diarrhœa and enteritis of children under 2 years of age.

In the three preceding weeks, deaths from enteric fever had been 3, 3, and 1 ; deaths from whooping-cough had been 1, 0, and 1 ; deaths from diphtheria had been 0, 1, and 2 ; and deaths from diarrhœal diseases had been 17, 25, and 14, respectively.

State of Infectious Disease in the Dublin Registration Area, and in Belfast, Cork, Londonderry, Limerick, and Waterford.

The following Table shows the Number of Cases of Infectious Diseases notified, under the "Infectious Diseases (Notification) Act, 1889," and the "Tuberculosis Prevention (Ireland) Act, 1908," in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the Cities of Belfast, Cork, Londonderry, Limerick, and Waterford, during the week ended October 3, 1914, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District

Cities and Urban Districts	Week ending	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Pyrexia (origin uncertain) *a*	Enteric or Typhoid Fever	Erysipelas	Puerperal Fever	Whooping-cough	Cerebro-spinal Fever	Diarrhœal Diseases	Pulmonary Tuberculosis	Total
City of Dublin	Sept. 12	*	*	12	–	–	6	–	–	11	5	–	*	–	*	33	67
	Sept. 19	*	*	11	–	–	4	–	–	11	3	–	*	–	*	16	45
	Sept. 26	*	*	7	–	–	6	–	–	11	1	1	*	–	*	18	44
	Oct. 3	*	*	8	–	–	11	–	1	14	3	–	*	–	*	12	59
Rathmines and Rathgar Urban District	Sept. 12	*	*	1	–	–	–	–	–	–	–	–	*	*	*	0	1
	Sept. 19	*	*	3	–	–	2	–	–	–	2	–	*	*	*	*	9
	Sept. 26	*	*	1	–	–	1	–	–	1	–	–	*	*	*	*	3
	Oct. 3	*	*	2	–	–	1	–	–	1	–	–	*	*	*	*	4
Pembroke Urban District	Sept. 12	–	–	1	–	–	–	–	–	1	–	–	–	*	*	–	2
	Sept. 19	–	–	1	–	–	1	–	–	–	–	–	–	*	*	–	2
	Sept. 26	–	–	–	–	–	–	–	–	–	–	–	–	*	*	–	–
	Oct. 3	–	–	–	–	–	2	–	–	–	–	–	–	–	*	–	2
Blackrock Urban District	Sept. 12		*	–	–	–	–	–	–	–	–	–	*	–	*	*	
	Sept. 19	–	*	–	–	–	–	–	–	–	–	–	*	–	*	*	–
	Sept. 26	–	*	–	–	–	–	–	–	–	–	–	*	–	*	*	–
	Oct. 3	–	*	–	–	–	–	–	–	–	–	–	*	–	*	*	–
Kingstown Urban District	Sept. 12	*	*	–	–	–	–	–	–	–	–	–	*	–	*	–	–
	Sept. 19	*	*	–	–	–	–	–	–	–	–	–	*	–	*	–	–
	Sept. 26	*	*	–	–	–	–	–	–	1	1	–	*	–	*	–	2
	Oct. 3	*	*	1	–	–	–	–	–	–	–	–	*	–	*	–	1
City of Belfast	Sept. 12	*	*	43	–	–	6	–	–	2	2	–	*	–	*	6	59
	Sept. 19	*	*	42	–	–	6	–	–	3	2	1	*	1	*	1	55
	Sept. 26	*	*	70	–	–	3	–	–	4	4	–	*	–	*	4	84
	Oct. 3	*	*	72	–	–	5	1	–	1	10	–	*	–	*	1	90
City of Cork	Sept. 12	1	*	4	–	–	–	–	–	1	2	1	*	*	20	*	29*b*
	Sept. 19	–	*	4	–	–	2	–	–	1	1	–	*	*	23	*	31
	Sept. 26	2	*	3	–	–	3	1	1	2	–	–	*	*	16	*	29*c*
	Oct. 3	1	*	2	1	–	–	–	–	1	–	–	*	*	6	*	14
City of Londonderry	Sept. 12	*	*	–	–	–	–	–	–	1	–	–	*	*	*	*	1
	Sept. 19	*	*	2	–	–	–	–	–	2	1	–	*	*	*	*	5
	Sept. 26	*	*	1	–	–	–	–	–	–	2	–	*	*	*	*	3
	Oct. 3	*	*	2	–	–	1	–	–	–	–	–	*	*	*	*	
City of Limerick	Sept. 12	*	*	1	–	–	–	–	–	1	–	–	*	–	*	*	2
	Sept. 19	*	*	3	–	–	–	1	–	–	–	–	*	–	*	*	4
	Sept. 26	*	*	4	–	–	–	–	–	1	–	–	*	–	*	*	5
	Oct. 3	*	*	5	–	–	–	–	–	–	–	–	*	–	*	*	5
City of Waterford	Sept. 12	*	*	4	–	–	–	–	–	2	–	–	*	*	*	–	6
	Sept. 19	*	*	6	–	–	–	–	–	–	–	–	*	*	*	–	6
	Sept. 26	*	*	5	–	–	–	–	–	–	–	–	*	*	*	–	5
	Oct. 3	*	*	4	–	–	–	–	–	–	–	–	*	*	*	–	4

a Continued Fever. *b* Not including 1 case of varicella. *c* Not including 2 cases of varicella.

Of 26 deaths from all forms of tuberculous disease, 17 were from pulmonary tuberculosis, 4 from tuberculous meningitis, 1 from abdominal tuberculosis, and 4 from other forms of the disease. In the three preceding weeks deaths from tuberculous disease had numbered 21, 27, and 30, respectively.

Fifteen deaths from cancer were registered.

Ten deaths from pneumonia included 1 from broncho-pneumonia, 1 from lobar pneumonia, and 8 from pneumonia (type not distinguished).

Among deaths of infants under 1 year of age 2 were ascribed to convulsions and 4 to premature birth.

Organic diseases of the heart caused 14 deaths, and bronchitis caused 16 deaths.

There were 2 accidental deaths.

In 8 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases include the deaths of 5 infants under one year of age, and the deaths of 2 persons aged 65 years and upwards.

Thirty-nine of the persons whose deaths were registered during the week in question were under 5 years of age (26 being infants under 1 year, of whom 9 were under 1 month old), and 36 were aged 65 years and upwards, including 24 persons aged 70 and upwards. Among the latter were 17 aged 75 and upwards, of whom 1 (a female) was stated to have been aged 94 years.

Sixty-seven of the deaths registered during the week occurred in hospitals and other public institutions; of this number 11 took place in the North Dublin Union Workhouse, 10 in the South Dublin Union Workhouse, and 4 in the Rathdown Union Workhouse.

Cases of Infectious Diseases under Treatment in Dublin Hospitals.

During the week ended October 3, 1914, 11 cases of enteric fever were admitted to hospital, 7 were discharged, and 79 cases remained under treatment in hospital at the close of the week, the respective numbers in hospital at the close of the 3 preceding weeks having been 75, 72, and 75.

Two cases of measles were admitted to hospital, 2 were discharged and 4 cases remained under treatment at the close

of the week. At the end of the 3 preceding weeks the number of such cases had been 3, 3, and 4, respectively.

Twelve cases of scarlet fever were admitted to hospital, 23 were discharged, and 59 cases remained under treatment at the close of the week. This number is exclusive of 20 convalescents in Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital. At the close of the 3 preceding weeks the cases in hospital had been 56, 66, and 70, respectively.

Seventeen cases of diphtheria were admitted to hospital during the week, 10 were discharged, and there was 1 death. The cases in hospital, which at the close of the 3 preceding weeks numbered 29, 28, and 32 respectively, were 38 at the close of the week under discussion.

In addition to the above-named diseases, 6 cases of pneumonia were admitted to hospital, 9 were discharged, and 19 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, October 3, in 97 large English towns (including London, in which the rate was 14.9) was equal to an average annual death-rate of 14.3 per 1,000 persons living. The average rate for 16 principal towns of Scotland was 15.6 per 1,000, the rate for Glasgow being 15.5, and that for Edinburgh 13.8.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by A. Maxwell Williamson, M.D., B.Sc., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended October 3. From this Report it appears that of a total of 107 cases notified, 64 were of scarlet fever, 23 of diphtheria, 13 of phthisis, 6 of erysipelas, and 1 of enteric fever. Among the 673 cases of infectious diseases in hospital at the close of the week were 322 cases of scarlet fever, 199 of phthisis, 88 of diphtheria, 12 of enteric fever, and 10 of erysipelas.

METEOROLOGY.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of September,* 1914.

Mean Height of Barometer,	30.070 inches.
Maximal Height of Barometer (27th, at 9 a.m.),	30.443 ,,
Minimal Height of Barometer (14th, at 3 p.m.)	29.310 ,,
Mean Dry-bulb Temperature,	54.7°.
Mean Wet-bulb Temperature,	52.4°.
Mean Dew-point Temperature,	50.1°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.372 inch.
Mean Humidity,	85.1 per cent.
Highest Temperature in Shade (on 2nd),	71.2°.
Lowest Temperature in Shade (on 21st),	37.8°.
Lowest Temperature on Grass (Radiation) (21st)	36.1°.
Mean Amount of Cloud,	38.8 per cent.
Rainfall (on 9 days),	1.360 inches.
Greatest Daily Rainfall (on 16th),	.750 inch.
General Directions of Wind,	N.W., W., S.W.

Remarks.

A favourable, fine, generally dry month, with a low percentage of cloud (38.8), especially in the evening (28.3 per cent. at 9 p.m.). More than half the rainfall for the whole month in Dublin took place on the night of the 16th, when the measurement was exactly three-quarters of an inch, the total for the month being 1.360 inches. A rainy, unsettled period was ushered in by a brief thunderstorm on the forenoon of the 8th, and rain was recorded daily in Dublin from the 10th to the 16th inclusive. There was only one rain-day after the 16th, namely, the 22nd, when only .01 to .02 was measured at the Dublin observing stations. Up to the 10th the weather was unusually warm: from that date until the 23rd it was equally cold for the time of year, sharp frosts being felt on several nights in the inland districts of both Great Britain and Ireland. After the 22nd there was a considerable recovery of temperature, but the 29th, although very fine, was a cold day, the range of temperature in Dublin being from 45.1° to 56.9° in the daytime and back to 41.0° during the following night.

At the beginning of the month the barometer stood high, and gradients were slight—the result being quite fine, warm weather. After the 6th the distribution of atmospheric

pressure was cyclonic until the 20th, when a new anticyclone advanced over Ireland from the westward. In the cyclonic period gradients were not steep until the 11th, but from that day onward to the 19th winds of gale force were reported from one point or other of the British coasts—the gales of the 14th being universal. During the closing days of the month also an anticyclone over Ireland and deep cyclonic depressions passing eastward across the Norwegian Sea and Scandinavia caused severe gales in those regions and on the Scottish coasts.

A succession of beautiful tinted "afterglows" formed a feature of the evening skies towards the close of the month. They were no doubt caused by dust in the atmosphere—possibly the "dust" of battle-smoke connected with the existing European War. At 8 15 p.m. of the 27th a magnificent band of auroral light shot up from the western horizon almost to the zenith. It was connected with a display of aurora borealis.

In Dublin the arithmetical mean temperature (56.5°) was 0.6° above the average (55.9°); the mean dry-bulb readings at 9 a.m. and 9 p.m. were 54.7°. In the forty-nine years ending with 1914, September was coldest in 1886 and 1892 (M. T. = 53.0°), and warmest in 1865 (M. T. = 61.4) and 1898 (M. T. = 60.2°). In 1913 the M. T. was 56.5°.

The mean height of the barometer was 30.070 inches, or 0.160 inch above the corrected average value for September—namely, 29.910 inches. The mercury rose to 30.443 inches at 9 a.m. of the 27th, and fell to 29.310 inches at 3 p.m. of the 14th. The observed range of atmospheric pressure was, therefore, 1.133 inches.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 54.7°, or 5.0° below the value for August, 1914. Using the formula, *Mean Temp.* = *Min.* + (*Max.* — *Min.*) × .476, the mean temperature was 56.2°, or 0.5° above the average mean temperature for September, calculated in the same way, in the thirty-five years, 1871–1905, inclusive (55.7°). The arithmetical mean of the maximal and minimal readings was 56.5°, compared with a thirty-five years' average of 55.9°. The mean maximum was 62.7°; the mean minimum was 50.2°. On the 2nd the thermometer in the screen rose to 71.2°—wind, calm; on the 21st the temperature fell to 37.8°—wind, N.W. The minimum on the grass was 36.1° on the 21st.

The rainfall was 1.360 inches on 9 days. The average rainfall for September in the thirty-five years, 1871-1905, inclusive, was 2.210 inches, and the average number of rain-days was 15. In 1871 the rainfall was very large—4.048 inches on, however, only 13 days; in 1913 it was 4.310 inches on 13 days; in 1896 no less than 5.073 inches fell on 23 days, establishing a record rainfall for September. On the other hand, in 1865, only .056 inch was measured on but 3 days. In 1912 only .570 inch fell on 8 days.

High winds were noted on 9 days, but attained the force of a gale only on the 14th. Fog occurred on the 9th. A solar halo was seen on the 18th and again on the 19th; aurora borealis on the 27th.

The rainfall in Dublin during the nine months ending September 30th amounted to 15.827 inches on 140 days, compared with 20.982 inches on 140 days in 1913, 22.658 inches on 158 days in 1912, 12.599 inches on 120 days in 1911, 25.108 inches on 159 days in 1910, 18.493 inches on 134 days in 1909, 19.557 inches on 154 days in 1908, 17.140 inches on 153 days in 1907, 16.121 inches on 146 days in 1906, only 10.968 inches on 112 days in 1887, and a thirty-five years' average of 20.160 inches on 146 days.

At Ardgillan Castle, Balbriggan, Co. Dublin, 210 feet above sea-level, Captain Edward Taylor, D.L., measured 1.07 inches of rain on 7 days, the rainfall being .99 inch below the average and the rain-days being 5 in defect. The total rainfall from January 1 amounts to 16.68 inches on 122 days. The rainfall is 4.19 inches below, and the rain-days are 15 below, the average. The maximal temperature in the shade was 72.0° on the 2nd, the minimum was 38.0° on the 21st. Within the past 20 years September was driest in 1894, with a rainfall of 0.110 inch on only two days (the least in any month); wettest in 1913, the rainfall being 5.54 inches on 12 days.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, Co. Dublin, was .895 inch on 7 days, the greatest fall in 24 hours being .31 inch on the 16th.

Mr. J. Pilkington reports that the rainfall at Stirling, Clonee, Co. Meath (231 feet above sea-level), was 1.10 inches on 9 days. The largest amounts recorded in 24 hours were .32 inch on the 12th and .31 inch on the 16th. The only rainfall after the 18th was .01 inch on the 27th. Since January, 1914, the rainfall at Stirling amounts to 18.65 inches on 131 days.

The rainfall recorded at the Ordnance Survey Office, Phœnix Park, was 1.230 inches on 10 days, the greatest measurement in 24 hours being .460 inch on the 16th. The total amount of sunshine at this station was 173.1 hours, the most registered on any one day being 11.2 hours on the 20th.

At Cheeverstown Convalescent Home, Clondalkin, Co. Dublin, Miss C. Violet Kirkpatrick recorded a rainfall of 1.92 inches on 10 days, the maximal fall in 24 hours being .81 inch on the 16th.

At 21 Leeson Park, Dublin, Dr. Christopher Joynt, F.R.C.P.I., registered 1.163 inches of rain on 6 days, the greatest fall in 24 hours being .690 inch on the 16th. Up to September 30, the rainfall at this station was 15.000 inches on 128 days.

Mr. Harold Fayle sends the following weather observations taken at 19 Highfield Road, Rathgar, Co. Dublin :—

Mean Height of Barometer,	30.080 inches.
Highest corrected reading (27th, 9 a.m.),	30.45 ,,
Lowest corrected reading (14th, 1 p.m.),	29.35 ,,
Mean Dry-bulb Temperature,	55.2°.
Mean Wet-bulb Temperature,	52.8°.
Mean Vapour Pressure,	.367 inch.
Mean Humidity,	84 per cent.
Mean Maximal Temperature,	63.7°.
Mean Minimal Temperature,	48.1°.
Arithmetical Mean Temperature,	55.9°.
Absolute Maximal Temperature (1st),	76°.
Absolute Minimal Temperature (21st),	34°.
Lowest Temperature on Grass (21st),	29°.
Highest Temperature in Sun (7th),	134°.
Rainfall, on 8 days,	1.26 inches.
Greatest Daily Rainfall (16th),	.67 inch.
Mean Amount of Cloud,	50 per cent.
Prevailing Direction of Wind,	S.W.

Ground Frost, 1 day ; Gale, 1 day.

Dr. Arthur S. Goff reports that at Belfort House, Dundrum, Co. Dublin, the rainfall was 1.20 inches on 7 days. The greatest daily measurement was .57 inch on the 16th. The temperature in the shade ranged from 76° on the 1st to 38° on the 21st. The mean shade temperature was 57.7°. Thunder was heard on the 8th.

At Manor Mill Lodge, Dundrum, Co. Dublin, Mr. George B.

Edmondson recorded a rainfall of 1.19 inches on 10 days, the greatest fall in 24 hours being .51 inch on the 16th. The shaded thermometer rose to 74° on the 1st, and fell to 38° on the 21st and 22nd. The mean temperature in the shade was 56.1°.

At Marino, Killiney, Co. Dublin, Mr. Wm. J. M'Cabe recorded a rainfall of only .65 inch on 6 days, the largest measurements in 24 hours being .30 inch on the 16th. The average September rainfall at Cloncevin, Killiney, in 24 years (1885–1908) was 1.961 inches on 12.9 days.

Dr. J. H. M. Armstrong, M.B., reports that at Coolagad, Greystones, Co. Wicklow, the rainfall was 1.23 inches on 7 days. The heaviest fall in 24 hours was .73 inch on the 16th. At Coolagad the rainfall since January 1st, 1914, has been 21.75 inches on 134 days. Temperature in the shade ranged between 71° on the 3rd and 41° on the 21st. There was a sea-fog on the morning of the 3rd. Thunder and lightning occurred on the 8th, and there was a violent N.W. gale on the 14th from 11 a.m. to 6 p.m.

At Auburn, Greystones, Miss A. Ross-Todd and Mrs. Sydney O'Sullivan recorded a rainfall of 1.17 inches on 8 days. The greatest rainfall in 24 hours was .72 inch on the 16th.

Dr. Charles Denys Hanan, M.D., Resident Medical Officer, reports that at the Royal National Hospital for Consumption for Ireland, Newcastle, Co. Wicklow, rain fell to the amount of .48 inch on only 5 days, the heaviest rainfall in 24 hours being .20 inch on the 12th. The screened thermometers rose to 72° on the 2nd and fell to 39° on the 21st. The mean maximal temperature was 62.1°, the mean minimum 49.2°, and the arithmetical mean temperature 55.7°.

The Rev. Arthur Wilson, M.A., returns the rainfall at the Rectory, Dunmanway, Co. Cork, at 4.23 inches on 16 days, the heaviest falls in 24 hours being 1.11 inches on the 7th, .70 inch on the 6th, and .56 inch on the 16th. The weather was very unsettled from the 6th to the 16th inclusive. From the latter date rain fell on only 3 days, the last 7 days being rainless, with bright warm sunshine by day and frequent frosts by night. The total fall in the completed 9 months of 1914 has been 46.19 inches, or 9.20 inches more than the average of the same period in 6 years (36.99 inches). Distant thunder was heard on the 9th. There was a violent storm for a few hours on the 14th.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XVII.—*Diligence and Professional Success.*[a] By F. CONWAY DWYER, M.D., Univ. Dubl.; President of the Royal College of Surgeons in Ireland; Surgeon to the Richmond Hospital, Dublin; Professor of Surgery, R.C.S.I.

GENTLEMEN,—It is not my intention to inflict upon you anything in the nature of a formal introductory address. My purpose is very briefly and very heartily to bid you welcome to the Medical School of the Royal College of Surgeons. This task, and a very grateful one it is, has by immemorial custom been the privilege of the President of the College for the time being. To those of you who are resuming their studies and to those who appear for the first time amongst us, I desire to extend, on the part of the School and myself, a very cordial welcome. I happen to be in the somewhat unusual position of being a member of the Teaching Faculty of the School and President of the College, and incidentally I may admit to you in confidence that I am extremely proud of being

[a] An Address delivered at the opening of the Session, 1914–1915, to the Students of the Schools of Surgery, Royal College of Surgeons in Ireland, on Thursday, October 15, 1914.

able to address you in that dual capacity. I feel deeply the honour and responsibility involved in holding two such offices, tempered to some degree by a feeling that I am rewarded in excess of my desserts. It is not necessary for me to say one word upon the distinguished place of our College as a centre of medical teaching. Its reputation is firmly established and universally admitted, thanks to the abilities and exertions of a long roll of teachers and workers in every branch of medical science. There is very considerable gratification to be found in the reflection that this proud position has been attained and retained without any of the substantial pecuniary endowments which some of our more favoured rivals derive from the State. This, however, is hardly a suitable occasion for the ventilation of our grievance, and I shall say no more about it now. In the future some opportunity will be found for the proper presentation of this important matter. It is a grievance, and as Irish grievances of late years are happily diminishing in number, we shall do well to make the most of the few remaining ones. It may be that in the near future this last remaining national wrong may be rectified by the tardy recognition of the right of our school to some State aid. Enough of this topic for the present. It was my fate as a student to attend introductory addresses, and to be presented with large quantities of advice of an exhortatory nature, all extremely well-meant and very tedious and depressing to listen to. It appeared to me that the ideals placed before us for our guidance were of so exalted a character as to be impossible of achievement, the mere mortals, endowed with the average amount of human perversity, could never hope to attain these inaccessible heights of human conduct and endeavour. I thought at the time, and I think so still, that these well-meaning persons pitched the note of perfection in too high a key. Be that as it may I am conscious of possessing no aptitude of this sort. I do hope however to bring under your notice some matters of practical moment for your future guidance and success in your profession. I desire to impress upon you as earnestly as I can

that it is by the proper use of the opportunities *now* at your disposal that your entire future career for good or ill will be influenced, That is a hard, undeniable fact which you will do well to lay to heart. I cannot too emphatically insist on this. I may add for your encouragement that ordinary diligence and moderate capacity will enable you to become efficient and creditable members of the medical profession. But, lest I should seem to place the qualities required for success in your profession on too humble a scale, I wish to remind you that diligence implies the possession of qualities which are by no means very common. It means sustained and continuous powers of application, systematically and rigidly directed to the attainment of the desired object. In other words, it means Will and Energy. And it is by these qualities men differ so enormously from each other. It is not by the possession of unusual natural gifts that the different careers of men are determined as by their capacity for infinite pains. So recognised is this, that this quality has been called genius, and to a great extent such a definition would seem a just one.

To those who are commencing their studies, and to those who have made some progress, the number of subjects to be studied and the standard of proficiency exacted under the existing system of examination may cause some depression, not to say dismay. But do not be cast down. I admit the course of studies and the number and variety of the subjects is calculated to produce some such impression, but remember that this course of studies, although in some direction overweighted, is not quite so formidable as it looks. At the same time it makes no allowance for slackness. The penalty for idleness is severe, measured by the loss of time it entails. Take for instance the study of Anatomy; as now arranged it is much less exacting as regards attendance at lectures and the number of sessions devoted to it than it was in my time. This retrenchment has been a wise reform and has been effected without in the least degree impairing the proficiency required in this most important branch of study. While

I value as highly as any one can the necessity of an exact and exhaustive knowledge of anatomy, I am sure that too much time was devoted to it in past years. There were many reasons for this which do not concern us now. In what I have said I should be very sorry to belittle for one moment the necessity for anatomical work. This subject has always been, and must continue to be, a vital and essential part of the study of Medicine. This is self-evident. I think for my part that anatomy is learned better and remembered better in the dissecting room than in the lecture theatre, and I am pleased to see that this view finds expression in our curriculum. Anatomy can best be acquired with scalpel and forceps under proper guidance from the professor and his demonstrators. In this way not alone are the facts mastered, but the hand and eye obtain invaluable training. My advice is to you—spend as much time as possible in the dissecting room, any really useful knowledge of the subject is to be acquired there if you make a proper use of your time. Of course I know many valuable aids to anatomical study have been introduced lately. I have seen a machine like a search-light apparatus, which I am told achieves wonders in the teaching of anatomy. I have no doubt it is very useful. It is certainly a very formidable looking piece of ordnance, but you will find the older methods still reliable. I fear that one of the unfortunate results of the heavily-weighted medical curriculum has had the effect, to some extent, of interfering with regular hospital attendance. I would regard such a consequence as deplorable. It is only by punctual and regular attendance at hospital that you can hope to learn the subject-matter of your life work. It is only by the constant study of disease at the bed-side and in out-patient departments that you can hope to obtain any real knowledge of your calling. All your other studies are intended to prepare you for this end. Important as they are, they are essentially subsidiary to the paramount necessity of studying disease in the only place it can be studied, that is at the bedside. No amount of reading can compensate for deficiences in this matter; you cannot

"cram" clinical experience. I know this well. I was for many years examiner in surgery for the College, and I learned to recognise in a very short time the difference between a student who trusted to book knowledge and the man whose knowledge was the result of clinical observation. We all know how enduring an impression is produced by a case we have seen and examined, compared with the fleeting impression that even a well-reported case leaves. One is a vivid mental impression that our memory retains, and in this way is built up the accumulated experience which gives our judgment any real value. Now I would urge upon you with all the force I can, that if you desire to become capable members of your profession, it is your imperative duty to yourselves and the public to attend to your hospital work. There is no other way by which habits of observation can be acquired and that familiarity with the *stigmata* of disease which gives confidence and decision when confronted with cases in your own practice. In this connection I should like to lay stress upon the importance of case-taking, a duty I fear somewhat neglected in our hospitals, and that through no fault of the students. The fault is, I fear, with your teachers, who do not insist upon a proper record being presented to them by the dressers and resident pupils of the cases under their care. A very valuable source of instruction and training is here sacrificed. Careful case-taking cultivates habits of precision, develops the faculty of observation, and enables a student to systematise his work. It is well known that many of our men who seek to enter the Army and Naval Medical Service compare badly in this respect with candidates from the other side of the Channel.

Now, gentlemen, I have delayed you long. If I have seemed to have laid too much stress upon the arduous nature of the tasks before you, I shall ask you to meet them with the gaiety and gallantry that our countrymen are now displaying on the battle-fields of France.

In conclusion, I beg to assure you you have the best wishes of my colleagues and myself for your future success.

ART. XVIII.—*The Threshold of Disease.*[a] By JAMES ALEXANDER LINDSAY, M.D., F.R.C.P.; Professor of Medicine in the Queen's University of Belfast; President of the Section.

MEDICAL Science seems likely to advance in three directions, viz.: first, in gaining better knowledge of the causation of disease; secondly, in the acquisition of facilities for earlier diagnosis; and thirdly, in the discovery of improved methods of treatment. It is to the second of these topics that I propose to direct your attention at present.

Early diagnosis of disease is, we are all agreed, a matter of vital moment. It is important mainly for two reasons—first, because the neglect or misinterpretation of early symptoms often turns a slight case into a serious one; and secondly, because the efficacy of treatment is in many cases proportionate to the promptitude with which it is applied. Amongst the "calamities of medicine"—to use Paget's phrase—failures to make and act upon an early diagnosis take a prominent place. Time lost in the field of disease is seldom regained, and the loss is both one of safety to the patient and of credit to the physician.

Let us first glance at a few of the simplest and most obvious cases before we penetrate to the heart of our subject. Chronic dyspepsia is the blight of innumerable lives, but its first beginnings are simple enough and tractable enough. The dyspeptic, unlike the poet, *fit non nascitur*. He does not often owe much to heredity. Either he has incurred dietetic error or he has prematurely used up his original stock of nerve force. He may have eaten and drunken not wisely but too well, or, on the other hand, insufficiently; or neglected those important aids to health which the dental art supplies; or his nervous energies may have been dissipated too soon by work,

[a] Read in the Section of Medicine in the Royal Academy of Medicine in Ireland on Friday, November 20, 1914.

worry, or pleasure. Whatever be the cause, his digestive efficiency does not fail suddenly. The machine creaks often before it refuses to move. But the admonitions are commonly neglected. A timely warning to such persons to regulate their diet, take care of their teeth, and conserve betimes their nervous energy would save them much suffering, and incidentally deprive the world of a good deal of the literature of pessimism. Gout, unlike dyspepsia, owes much to heredity. It often gives warning betimes of the coming disasters to joints, kidneys and circulation—warnings too generally ignored until the hour of nocturnal torture strikes. The late Lord Dufferin once said that his ancestors had drunk so much wine that he was obliged to drink water. Not all the scions of a gouty ancestry show a like power of self-control. An early diagnosis of a gouty tendency and of incipient gouty manifestations, and suitable action thereon, will not always banish the enemy, but they may do something to keep him at bay. The chronic bronchitic has many warnings before his malady takes final hold. The victim of chronic rheumatism commonly makes light of his malady in the stages when treatment would be most efficacious. These are obvious cases which suggest their own moral. I pass on to consider some more difficult problems.

I wish to deal with a few cases where failure to make an early diagnosis is often due not to the carelessness of either patient or doctor, but to the inherent difficulties of the case. I have selected four examples where an early diagnosis raises problems always difficult, sometimes insoluble, and I have purposely selected them from widely different departments of Medicine. The cases are as follows :—

(*a*) Endocarditis ;
(*b*) Cancer of the stomach ;
(*c*) Disseminated sclerosis ;
(*d*) Pulmonary tuberculosis.

I believe we may study with profit the problem of early diagnosis in these four diverse fields.

(*a*) ENDOCARDITIS.

When a patient is suffering from acute or subacute rheumatism we may consider the question of cardiac involvement from three points of view. We may ask what are the probabilities of the case, based upon statistics; or we may take account of signs and symptoms; or we may seek aid from such instrumental methods of investigation as the polygraph and the electro-cardiograph. As regards the first point, while I cannot go the whole length with Dr. Norman Moore in affirming that the involvement of the heart is an integral element in every case of acute or subacute rheumatism, I regard such involvement as extremely common in the adult and almost the rule in the child. We are justified in strongly suspecting the heart in every case of acute or subacute rheumatism, and such suspicion is specially strong in the case of the child or the young adolescent. On the signs and symptoms of early cardiac involvement I need not dilate—they are familiar to you all; but I should like to press the point that even slight physical signs—a little muffling of the first sound at the apex, a trifling increase in the area of superficial cardiac dulness, a slight degree of arrhythmia—are commonly very significant. How far the polygraph and the electro-cardiograph will help us in the detection of early valvular or myocardial changes it is, perhaps, premature to say. Neither of these instruments helps to recognise mitral regurgitation, which is by far the commonest lesion in such cases. But in a certain undetermined proportion of cases of early rheumatic endocarditis there are changes in the myocardium, sometimes involving impaired conductivity of the wave of contraction, and such impaired conductivity will show itself either in the polygraphic tracing or in the electro-cardiogram.

The importance of early diagnosis in endocarditis would be difficult to exaggerate. Dr. Caton has done good service in insisting upon the necessity for prolonged rest in such cases, and the good results which may be expected

from it. Careless treatment of these patients, a too optimistic attitude, a premature return to work spell disaster in the future. Timely watchfulness will be well repaid.

(*b*) CANCER OF THE STOMACH.

The early diagnosis of this lesion is beset with the most formidable difficulties. The onset may be marked by symptoms of irritable dyspepsia and pain in the epigastrium, or by loss of weight, anæmia and debility, or by a vague failure of the general health. I have not found the history of a previous gastric ulcer of much help in diagnosis. Marked and somewhat abrupt loss of appetite, especially for flesh meat, is a frequent and significant symptom, on which considerable reliance may be placed, if the anorexia is not otherwise explained. Loss of weight, even at an early stage, is usually pronounced, and is progressive from week to week and month to month. The examination of the gastric contents may assist. Some differences of opinion exist regarding the value of the HCl content. My experience of this test is that it possesses a real, but limited, value. In the great majority of cases of gastric cancer I have found an absence of free HCl, but it is also absent in many other conditions, such as pernicious anæmia, cirrhosis of the stomach, and in some cases of dilatation of the stomach and of chronic dyspepsia. The absence of the free acid must, therefore, be interpreted with caution in a doubtful case. On the other hand, no case has come under my observation where a normal acid content has co-existed with gastric cancer, though such cases have been reported by various observers. They are probably rare, and we shall hardly err in regarding the presence of free HCl as valuable evidence against the existence of gastric cancer. The bacteriology of these cases, and especially the weight to be attached to the presence of the Oppler-Boas bacillus, are still matters of controversy. Vomiting may be an early symptom, but more usually develops after some

progress of the disease has occurred. Hæmatemesis is rarely, in my experience, an early symptom. Some epigastric tenderness may develop early, but a definite tumour belongs to the fully-developed stage of the disease. I might suggest the following rule of practice. "If a patient, especially of the male sex, who is over fifty years of age, and who has previously enjoyed a normal digestion, somewhat abruptly develops a marked distaste for food, especially for flesh meats; suffers from discomfort after meals, and perhaps occasionally vomits; begins to lose weight rather decidedly, and exhibits some degree of anæmia and debility—then, in the absence of some other obvious explanation, such as alcoholism, cirrhosis of the liver, or renal disease, the suspicion of incipient gastric cancer is strong." An examination of the blood should not be omitted, although the evidence thus obtained must be interpreted with caution. Broadly speaking, the patient suffering from incipient gastric cancer develops a decided and progressive secondary anæmia. The subject of chronic gastritis or chronic dyspepsia has no constant or significant blood changes. The question of the handling of these cases of incipient gastric carcinoma, where the diagnosis can be made with reasonable probability in the absence of tumour or other gross signs, involves a very difficult problem both for the physician and the surgeon. To procrastinate until the proof of disease is complete is a feeble policy involving a disastrous loss of time. Exploration, which is unattended by serious risk, seems justifiable, but physicians will be governed largely in their recommendation of such procedure by surgical experience regarding the results of the operative treatment of gastric cancer. The following figures are reported by Osler from the clinic of the brothers Mayo: In thirty-nine cases whose condition was known, who had been operated upon over five years before, seven were alive; of sixty-four, condition known, over four years, thirteen alive; of eighty-eight, condition known, over three years, eighteen alive and well.

Whether better results are likely to follow the adoption in certain cases of Schlatter's radical operation of the removal of the entire stomach the future will decide.

(*c*) DISSEMINATED SCLEROSIS.

The morbid anatomy of this affection, consisting as it does of small patches of sclerosis scattered irregularly through the brain, brain-axis, spinal cord, and sometimes the cranial nerves, prepares us for great variations in the symptoms and modes of onset of the disease. Few, if any diseases, present so varied a picture, and in few is error in diagnosis more probable or more frequent. Buzzard is probably correct in affirming that every physician is at some time or another mistaken in relation to the early diagnosis of the disease. When early diagnosis is in question we must dismiss from our minds the classical picture of disseminated sclerosis as described in text-books, viz.; intention tremor, nystagmus, scanning speech and spasticity of the lower limbs. Any or all of these symptoms may be absent at this stage. Rather must we inquire for transient disturbances of vision—amaurosis or diplopia—temporary impairment of bladder control, paræsthesiæ of one or more limbs, diminution of the abdominal reflexes, loss of tone of the sphincter iridis, shown by failure of the pupil to remain contracted in presence of the stimulus produced by light, giddiness, emotional instability. Here we have a group of symptoms, none of which taken singly is capable of any confident interpretation, but which are highly significant when taken as a whole. Transient pareses and a sense of fatigue in the legs may appear early. In a case of doubt the alternative possibilities of the case must be borne in mind. Most of the organic lesions of the nervous system are easily excluded. Paralysis agitans will hardly cause serious difficulty, the age law being commonly decisive. Hysteria is the most fertile source of error, and the difficulty of distinction is much increased by the fact that young female "disseminates" sometimes develop a

seemingly hysterical psychosis. But hysteria never exhibits the group of early symptoms which have been enumerated, and at a later stage nystagmus, pallor of the optic disc and ankle clonus make the distinction easy. How far early diagnosis may enable us to deal effectively with disseminated sclerosis is doubtful. The causation of the disease is most obscure. There is no known toxic factor. Infective diseases, chills, shock, mental stress, have been blamed, but on doubtful evidence. Syphilis has no influence. The course of the disease is so variable and periods of remission so common that treatment may easily get the credit which belongs to nature. But it seems reasonable to hope that the early recognition of these cases, the removal of sources of nervous strain, and the adoption of a well-ordered hygiene may improve the prospects of these unfortunate patients.

(*d*) PULMONARY TUBERCULOSIS.

I pass on to the most important case of all. The early diagnosis of pulmonary tuberculosis is a matter of vital importance because of the frequency of the disease, and of its comparative curability in the incipient stage. An immense amount of work has been done in recent years in connection with this subject, and many attempts have been made to find a short cut to a prompt and secure diagnosis. I have to essay the difficult task of evaluating these methods, which time is not available to describe in detail.

We may attempt to solve the problem of early diagnosis of pulmonary tuberculosis by the following methods :— (1) By an analysis of symptoms, history, and physical signs; (2) by an examination of the sputum; (3) by radioscopy and radiography; (4) by the tuberculin tests of Koch, von Pirquet, Moro, and Calmette; (5) by an examination of the blood after the method of Arneth; (6) by agglutinin and precipitin reactions on the lines of Widal's valuable test for typhoid fever; (7) by the

fixation-of-complement-test on the lines of Wassermann's well-known test for syphilis; (8) by the opsonic index method.

Most of these methods are too familiar to you to require any description. Arneth's method is, however, new and not widely known, so some account of it may not be inappropriate. Briefly, this observer hopes to find a diagnostic clue to tuberculosis, and to its activity and course, in changes which he describes in the neutrophile leucocytes. Arneth divides these cells into five groups, viz.—those in which the cells have one, two, three, four, five or more nuclei. He finds that in health these groups form approximately five per cent., thirty-five per cent., forty-one per cent., seventeen per cent., and two per cent. In the very earliest stage of pulmonary tuberculosis, when the general health is still unaffected, these various groups preserve their normal ratio, but so soon as any general infection occurs this ratio is disturbed. The first group rises to fifteen per cent., the second to from thirty-six to forty-six per cent., while the third group falls slightly, and fourth and fifth groups fall more decidedly. In more advanced cases with active symptoms the first group rises to from twenty-eight per cent. to fifty-two per cent., the second group to from thirty-seven per cent. to fifty-three per cent., while the third group falls to ten per cent., and the fourth and fifth groups tend to disappear altogether. It is claimed for this method that it gives us an accurate indication of the intensity of the infection and of the reaction of the patient's organism, and that, hence, it affords a useful guide to prognosis. In favourable cases, where recovery is in progress, the condition of the neutrophile leucocytes is said to tend to revert to the normal.

Arneth's method is comparatively new, and has not been extensively tried in this country. It is attractive and may contain some amount of promise, but it is not easy to believe that the changes in the leucocytes which are, no doubt, reactive in character, are quite specific for

tuberculosis in contradistinction to other infections. As I have not tried the method, I pass no judgment upon it.

Radioscopy and radiography afford interesting information in cases of pulmonary tuberculosis, but there is still a good deal of doubt as to their value in incipient cases, and the interpretation of the skiagram is often a matter of great difficulty. Amongst the earliest changes are a fine mottling in some of the characteristic areas, the dark lines due to the peribronchial fibrosis usually present, and, especially in children, the shadow cast by swollen bronchial glands. Impaired movements of the diaphragm are likely to develop later. Unfortunately the sources of fallacy are numerous, and the skiagram does not help us to differentiate between old healed lesions and recent active lesions. The method is one which appeals to the *x*-ray expert and the pulmonary specialist, but is not likely ever to become generally available.

The various tuberculin tests, regarding which such high hopes were once entertained, have proved disappointing. A little reflection will convince us that they suffer from an inherent and incurable defect. They all depend upon the principle that the organism once infected by tuberculosis has become hyper-sensitised to the action of tuberculin. But this hyper-sensitisation may depend upon the presence of an obsolete and healed lesion in lung or gland or bone. As seventy, eighty, or ninety per cent. of our city populations—the exact figure does not affect the argument—are, or have been, the subjects of tubercular infection, a positive reaction to tuberculin gives us little information of real value and may easily mislead as to the correct interpretation of the case before us. To put the matter in another form—tuberculin reactions do not distinguish between tubercular *infection* and tubercular *disease*, which is precisely the point that is really at issue. A negative reaction may be allowed some weight, but in ordinary city practice a positive reaction is the rule.

I need not say anything about the value of a routine

examination of the sputum. The discovery of tubercle bacilli is decisive, and bacilli may be found in quite early cases, although at this stage their absence, and, indeed, the entire absence of sputum is common.

The attempt to discover a reaction based upon the agglutinins and precipitins in the blood of tuberculosis patients—*i.e.*, a reaction analogous to Widal's valuable test for typhoid fever—has so far led to no fruitful result, and there seems to be no probable future for this method.

The latest suggestion of a specific test for tuberculosis is on the lines of the well-known Wassermann reaction which has proved so useful in the recognition of syphilis. The theory is that the serums of tuberculosis patients contain an anti-body capable of fixing complement in the presence of tuberculin. Positive results have been claimed for this method in proportions varying from one-quarter to three-quarters of the cases. It is affirmed that a negative result goes far to exclude tuberculosis. This method is quite new; it is still in the experimental stage, and it would be premature to express any opinion upon its probable usefulness.

The opsonic index method, the technique of which is now generally known, seems to yield interesting information in the hands of the pathological expert, but the results are very conflicting and the method is unsuitable for general adoption.

A review of the foregoing methods will probably convince us that no sure short-cut to a summary diagnosis of incipient pulmonary tuberculosis is at present available. Laboratory methods may give us a valuable suggestion or a useful caution; they can seldom afford definite guidance. We are not yet absolved from the necessity of basing our opinion in large measure upon a careful study of history, symptoms, and signs. Let us inquire where we stand to-day in reference to these matters. Two types of incipient case rise before the mind. In one type the examination of the chest is wholly negative; in the other slight but significant departures from the normal are pre-

sent; in both, symptoms—perhaps slight and not very characteristic—will be found. What are we to say of these cases where symptoms excite suspicion while signs are negative? A vague failure of general health in a young adolescent may have many explanations, but the suspicion of pulmonary tuberculosis will be strong where we find the syndrome of loss of weight, slight afternoon pyrexia, cough, and acceleration of the pulse. There is often a history of slight hæmoptysis which the patient frequently assures us "came from his throat," or "was due to his teeth." To this symptom much weight may be justly attached. Night sweating is occasionally an early symptom, and when present is most significant. Digestive disturbance may appear early and may strengthen the diagnosis, but it is often absent. On these points there will probably be no difference of opinion.

Acute divergence of view emerges, however, when we ask the question—What are the earliest physical signs of tubercular invasion of the lungs? A formidable list of authorities might be quoted who maintain that the earliest signs are auscultatory. Strümpell says: "The auscultatory signs in the beginning of the disease are in general more certain and easier to recognise than those from percussion." Cornet says: "In the earlier stages of the disease percussion does not help very materially." Wilson Fox says: "Percussion at the apex is often unaffected in the early stages." West says: "The physical signs yielded by auscultation are not only the earliest to be detected but remain throughout the disease the most important." Osler says: "Dulness is rarely present in early cases." In sharp conflict with the above views we have the opinion of an imposing array of observers who insist that the earliest signs are those yielded by percussion. Aufrecht affirms that percussion "offers positive information much sooner than auscultation." Krönig says: "It is a very widespread error to expect to find the earliest physical signs by auscultation." In England D. B. Lees and Clive Riviere have warmly advocated a

similar view. Powell says cautiously that "at this stage (viz., the incipient stage) the physical signs are but slight; the percussion note at one apex is slightly impaired and the respiration weaker, the inspiration being wavy, or even jerking. There are usually a few rhonchi, which, if limited to that apex, are very significant." My own belief is that auscultatory changes are in general prior to any appreciable muffling of the percussion note, and of auscultatory changes I believe the earliest to be a modification of the respiratory murmur either in the direction of weakness or harshness, with commonly some disturbance of the respiratory rhythm. Crepitation comes later.

The early diagnosis of pulmonary tuberculosis in young children is a separate problem and one of no little difficulty. In these patients tubercular infiltration of the lungs does not commonly show that preference for the apices which is so constant a feature in the adult. The disease is more diffusely disseminated or may specially affect the roots of the lungs. The tracheo-bronchial glands are frequently involved and may afford useful physical signs. The symptoms are often marked and progress rapid. The physical signs often trouble us not by their latency or deficiency, but rather by their abundance and by the difficulties attending their interpretation. The problem which most often arises is this—the child has a broncho-pneumonia, arising out of one of the exanthemata or otherwise, and is doing badly. The question is whether the pulmonary condition has been throughout, or has become, tubercular. In many of these cases physical signs are indecisive, and symptoms are capable of more than one interpretation. Osler hardly exaggerates when he says that in some of these cases time and the result of treatment alone can decide the diagnosis. The examination of the sputum, when it can be obtained, may, of course, settle the problem. I would suggest the need for caution when dealing with obscure pulmonary conditions in young children, and the desirability of not prematurely affixing the tubercular label. Goodhart is

undoubtedly right in holding that a good many suspicious cases ultimately clear up and come to nothing.

Before dismissing the subject of the diagnosis of early pulmonary tuberculosis I would like to record my conviction that quite early cases are in the majority of cases amenable to treatment. The human body, in spite of superficial appearances to the contrary, is really somewhat tolerant of tubercular infection, but to succeed we must begin operations before gross physical signs have developed. Many years ago I had occasion to visit that veteran of our profession, Sir Hermann Weber, and our conversation ran mainly on the subject of pulmonary tuberculosis. As I parted from him at his own door his last words to me were: "Get them early." In that, and not in any novel or heroic methods of treatment, lie at once our safety as physicians and our best hope for humanity.

Time will not permit us to consider in detail the numerous other cases where an early diagnosis is a matter of vital moment or is beset with peculiar difficulties. But I should like to emphasise my conviction that in researches in this field, from both the clinical and the pathological standpoint, lies one of the best hopes for the future of medical science. The public must learn that for disease to be countered successfully, it must have early recognition and timely treatment. Our hospitals are full of the wrecks of humanity, which we may, indeed, often patch up with more or less success, but which can never be restored to integrity. Prevention is best; early diagnosis is the next best; late diagnosis is too often only a *pis aller*. How different from their usual fate would be the destiny of the diabetic, the tabetic, the subject of granular kidney or arthritis deformans if these conditions were recognised at their earliest manifestations! But the diabetic commonly seeks advice only when thirst, polyuria and progressive emaciation can no longer be ignored. The tabetic regards his early pains as "only rheumatism." The victim of granular kidney waits until

his headaches, dyspepsia and visual troubles force themselves upon his reluctant attention. The arthritic makes light of early symptoms which too surely portend ultimate disablement. We must take care that to the ignorance of the public is not superadded any negligence on our part, any cavalier treatment of apparently trivial ailments, any neglect of significant symptoms. The out-patient room of one of our great hospitals is an excellent field for learning to distinguish promptly between the trivial and the essential, between some trifling ailment and the slight but significant manifestations of grave disease. It is a field to which the beginner and the junior student are, with curious perversity, often assigned. Rather it is the advanced student, who has learned his business in the wards and has already accumulated some fund of practical experience, who will there find his natural sphere and opportunity.

One of the problems of present day Medicine is to draw a just line in the diagnosis of disease between the clinician and the pathologist, between the hospital ward and the laboratory. It is most desirable that a fair balance should be maintained, and that there should be rational and sympathetic co-operation. The pathologist has not that first-hand knowledge of disease in the living subject which is so important. Dead-house appearances represent the late results of disease, not its origin or course. On the other hand the clinician cannot hope to keep pace with the rapidly-developing and ever-increasing complexity of modern pathological technique, though he may aspire to understand its methods and appraise its results. His skill in these matters, occasionally exercised, cannot compare with that of the man to whom they are a daily routine. In such matters as the examination of sputum, the Widal test for typhoid fever, or the Wassermann test for syphilis, the laboratory can give us inestimable aid. But I would plead that in the last resort diagnosis is the business of the clinician, and that the final test is bedside experience. While we examine blood, sputum, urine, gastric contents,

cerebro-spinal fluid, &c., &c., let us not forget to examine the patient. The old physicians who had not even a stethoscope or a clinical thermometer—not to mention an ophthalmoscope, laryngoscope, gastroscope, sphygmomanometer, polygraph, electro-cardiograph—were often extraordinarily shrewd judges of disease. Even Hippocrates may still be read with profit, and with a chastened sense that after more than two thousand years of the triumphant march of medical science he may still be able to teach us something. His first famous aphorism is familiar to us all, but will bear repetition: "Life is short; the art is long; occasion sudden; to make experiments dangerous; judgment difficult. Neither is it sufficient that the physician do his office unless the patient and his attendants do their duty, and that externals are likewise well-ordered." Perhaps the thirteenth aphorism is less familiar. It runs as follows: "Old men easily endure fasting; those who are middle-aged not so well; young men worse again than they, and children worst of all, especially those who are of a more lively spirit." These echoes from the great Age of Greece still strike the ear pleasantly, reminding us that medical insight is not the exclusive property of the moderns. And the English Hippocrates, Sydenham, is not yet wholly obsolete. To come nearer home, Graves on Fevers and Stokes on the Heart may still stimulate our minds and make us proud of Irish Medicine. Their pathology may need revision, but their clinical insight was rarely at fault.

You will remember that the first great aphorism of Hippocrates affirms that it is not sufficient for the physician to do his part, that the patient also has a duty to perform. In this matter of early diagnosis we are largely dependent upon the intelligence of the public. We cannot advise until we are consulted. We cannot detect the subtle premonitions of disease if these are disregarded by the patient. I hold it our duty to inculcate a timely watchfulness—quite distinct from fussy anxiety—in matters pertaining to health. And in these matters

the consultant needs the aid of the general practitioner, who is usually the first to have cognizance of the facts.

Obsta principiis is a very old and, I think, a very excellent medical maxim. The medical practitioner is too often in the position of the foolish virgins in the parable—he arrives too late. But the responsibility is not usually his.

I submit these considerations—most of them familiar and obvious—to your judgment, believing as I do that in the early recognition of disease and the prompt adoption of remedial measures lies the secret of much of the efficacy of our art.

ART. XIX.—*The Therapeutic Value of Pituitary Extract.*[a] By CHARLES O'BRIEN, B.A., M.D., B.Ch., B.A.O., Univ. Dubl.; Acting Surgeon, Royal Navy Medical Service.

INTRODUCTION.

OUR knowledge of the functions of the pituitary gland, which is the most obscure of the organs in the body, has greatly increased during the past few years. The activity of pituitary extracts was discovered about the same time as that of suprarenal extracts, but our knowledge of the former is much less than that of the latter.

In the year 1894 the properties of the extract obtained from adrenals were described by Oliver and Schäfer, and in the following year they investigated also the physiological effects produced by an extract made from the pituitary body, and also other extracts made from the spleen and thyroid glands.

While much importance was attached to adrenalin, very little notice was taken of the pituitary body. Indeed it was only towards the end of the last century that the functions of the ductless glands were proved, after many investigations, to be of vital importance.

[a] A Thesis read for the Degree of Doctor of Medicine in the University of Dublin, June, 1914.

We now know that destruction of the suprarenal glands, thyroid gland, or pituitary gland produces many symptoms, which in some cases have been relieved by the administration of extracts of similar glands obtained from animals. In other cases where the symptoms were unable to be relieved, death has resulted.

It has been shown by experiments that the functions of the pituitary gland are as vital as the functions of either the thyroid or suprarenal glands. The effects produced by the administration of pituitary and suprarenal extracts in many respects are similar—namely, the blood-pressure is raised owing chiefly to peripheral vaso-constriction.

In each the active principle is confined to a small portion of the gland, developed in the one case from the central nervous system and in the other from the sympathetic.

In some other respects the effects following the use of these two glands are different: pituitary extract causes contraction of the coronary arteries and the uterus, while that of adrenalin has little or no effect on either; also the administration of adrenalin causes an increase of salivary secretion, but pituitary extract has no such effect on this secretion.

The effects of thyroid extract in cases of cretinism and myxœdema are among the most striking in the science of Medicine. If a preparation of sheep's thyroid is given to patients suffering from myxœdema, all the symptoms of this disease usually disappear in about six weeks.

I believe that it will not be very long before the active principle of the pituitary gland will be isolated, and that this extract is destined to become of as great, if not greater, importance in medical practice than that of thyroid extract.

The object of this thesis is to give a general account of the recent work on the therapeutics of pituitary extract, with special reference to its value in shocks.

During the time I occupied the position of Senior House Surgeon to the Chesterfield and North Derbyshire Hospital

I treated with pituitary extract many cases of shock due to accidents, and a few cases due to operative shock, and also several cases suffering from toxæmia due to appendicitis and peritonitis. In my opinion some of these cases derived much benefit from pituitary extract.

Historical Outline.—Not many years ago the pituitary gland was considered to be of little or no importance. At one time it was thought to be intimately connected with the soul. Twenty-three centuries ago Hippocrates taught "it is to the efforts of nature that the physician should look for guidance." Yet it was only in the second half of the past century that the trend of medical thought turned in that direction, and the results of recent researches have been to throw some light on the functions of the pituitary gland. The results obtained from the investigations of other animal extracts led to the investigation of the pituitary.

By many investigations it was shown that adrenalin secretion had a marked affinity for oxygen, and that on reaching the air-cells of the lungs it becomes a constituent of hæmoglobin and of the red blood corpuscles, and is thus distributed over the body as an oxidising agent. By experiments on animals Oliver and Schäfer were the first to discover that adrenalin causes a rise of temperature and of blood-pressure. The results obtained by these experiments led to investigations being made as to where the governing centre of the adrenals lay, and these investigations showed that the controlling centre lay in the pituitary body. They showed that the pituitary body sends nerve fibres to the tuber cinereum and to the walls of the third ventricle, thence to the ponto-bulbar region and spinal cord, and thence to the sympathetic which supplies the nerves to the adrenals. These investigations showed that the pituitary like the adrenals, influenced general oxidation and the temperature, and also general metabolism and nutrition. By similar experiments it was shown that the functions of the thyroid and parathyroid glands were influenced by the pituitary body.

In 1909 Sajous, as the result of the investigations by many medical scientists, advanced the theory that the human body is supplied with an auto-protective mechanism through the ductless glands, and that these glands under the control of the pituitary body were the immunising efforts of nature for the protection of our bodies.

Thus within a few years it has been shown that the pituitary body, instead of being practically useless, is one of the most important structures in our bodies, and I believe that soon we shall have a much greater knowledge of all the functions of the pituitary body.

Anatomy.—The pituitary body is a small oval structure situated at the base of the brain in the depression of the sphenoid bone called the sella turcica. It consists of two parts—an anterior lobe and a posterior lobe. The posterior lobe, which is also called the infundibular lobe, is connected with the outer aspect of the floor of the third ventricle by the infundibulum.

Histology.—The anterior and posterior lobes are of totally different composition. The anterior lobe is glandular in structure, and is derived from the epiblast. It is composed of cubical epithelial cells separated by connective tissue. The epithelial cells come from the stomodæum. They secrete two substances—one fatty and the other colloid ; this colloid substance is similar to that secreted by the thyroid gland.

The posterior lobe, which is hypoblastic in origin, consists of ependymal and neuroglial cells, and fibres containing some epithelial cells, which resemble the epithelial cells in the olfactory membrane.

The pituitary body is supplied by nerve fibres from the sympathetic, and as I have previously stated a direct communication between it and the thyroid and suprarenal glands can be traced.

Physiology.—It was only quite recently that anything definite was known on this subject, and the physiological functions were studied in two ways :—

1. By injecting the extract of it into another animal.

2. By noting the effects produced by the removal of the whole or a portion, of the structure.

By experiments on cats, dogs, and other animals, Paulesco, Harvey Cushing, and others showed that total removal of the pituitary body produced prostration, apathy, increasing muscular weakness and tremor, dyspnœa, anorexia, and progressive emaciation, and finally death in about fourteen days.

By injections of the extracts of the anterior and posterior lobes Oliver and Schäfer found that they caused a rise in the blood-pressure.

Subsequently Howell found that this rise of blood-pressure was due to the extracts of the posterior lobe, because extracts of the anterior lobe alone did not produce a rise of blood-pressure, but that of the infundibular did. Although histological observations seem to indicate that the anterior lobe is the active part of the pituitary body, yet physiological experiments demonstrated that the extracts of the anterior lobe were for the most part inactive, whilst those of the posterior possessed the active properties.

These observations of Howell have since been verified as correct by Schäfer and Vincent.

By experiments on isolated organs of animals the rise in blood-pressure was found to be chiefly due to arterial constriction. Dale and Dixon in different experiments on dogs and goats proved that pituitary extract caused vaso-constriction of the arterioles of the pulmonary artery, and also of the coronary arteries, but adrenalin extract produced no effect. They also verified that a second dose of the extract, when the effect of the first dose had passed off, produced little or no effect in rising the blood-pressure.

Schäfer, Magnus and others, by experimenting on the kidneys of cats and dogs, showed that the first injection of pituitary extract causes a slight vaso-constriction of the renal arteries, and that the second injection caused slight vaso-dilation.

Experiments on the uterus in cats, dogs, guinea-pigs, rats and rabbits showed that the uterus, in both the pregnant and non-pregnant condition, contracted powerfully after the administration of pituitary extract. The action of the extracts of the posterior or infundibular lobe of the pituitary body was thus proved to be a direct stimulation of involuntary muscle without any relation to innervation. Its action is somewhat similar to that of digitalis, but the effect on the heart is slight, and that on plain muscle intense. No true immune reaction is produced by repeated injections of the extract. The active principle is excreted in the urine.

There is a close physiological inter-relationship between the suprarenal, thyroid and pituitary glands, and changes in the pituitary body lead to changes in the other ductless glands.

Pathology.—The commonest and most important lesions of the pituitary body are the tumour growths—both solid and cystic. These tumours may or may not arise from the gland itself. One of the commonest types of tumour is the adenomatous stroma of the chromophobe type: it may be primary or secondary. This tumour is soft, pulpy, fragile, and has a dark reddish appearance. They have been considered as malignant, but they do not invade, and metastases do not occur.

They sometimes cause pressure symptoms upon the neighbouring structures, and they may cause pressure atrophy of the sella turcica, and also atrophy of the optic nerve. Sometimes these tumours degenerate and form hæmorrhagic cysts; at other times cysts are formed with colloid contents, which have the appearance on section of thyroid tissue.

Teratomata, cysts and squamous epithelial tumours also occur. In the chromophobe stromas symptoms of hypopituitarism occur, such as high arterial tension, vascular degeneration, calcium retention, increased metabolism, and glycosuria.

When excessive action of the gland occurs in early

life, we get gigantism, and then if it occurs after the epiphyses have become ossified, we get acromegaly. It hypertrophies in diseases of the thyroid, thyroidectomy, parathyroidectomy, ablation of the suprarenals, and after castration.

Pharmacology.—I have previously stated that the active principle of the pituitary gland has not yet been isolated. There are probably two active principles present—namely, a pressor substance which causes a rise in the blood-pressure when injected into the blood stream and a depressor substance which is supposed to act on the kidneys, causing dilatation of the renal vessels, and consequently diuresis. The pressor substance is insoluble in alcohol and ether, and soluble in water and saline solution. The depressor substance is soluble in alcohol and ether, but this Schäfer and Magnus do not believe to be of a specific nature. The active principle is not destroyed by boiling, and therefore it can be sterilised for intravenous or intramuscular or subcutaneous injection. It is unaffected by gastric secretion, but destroyed by pancreatic secretion.

Pituitary extract has been used in numerous conditions, and in some of these with marked success.

The extract causes the heart to beat slower and strengthens its action. It also causes vaso-constriction of the blood vessels, which produces a rise of blood-pressure, and consequently the extract has been used in cases of low arterial tension or lowered blood-pressure, as in cardiac dilatation, fibrositis, neurasthenia, tobacco poisoning, chilblain circulation, arthritis deformans; also in all clinical conditions where toxæmia causes a fall of blood-pressure, and in depression apart from any disease. In shock, which is essentially a condition of lowered blood-pressure, it raises the blood pressure to a greater degree than is possible in more normal circumstances.

Pituitary extract by its special action on the uterus has been found to be a very valuable preparation in many physiological and pathological conditions of that organ.

It causes very powerful and rapid contractions of the uterus, which last longer than when ergot is used. It is very valuable in the last stages of labour, and is often used as an emergency remedy.

Very good results from it occur in *post-partum* hæmorrhage or inefficient uterine contractions, and in subinvolution of the uterus. It has also been successfully used in cases where premature labour was desired, and also in delayed labour due to insufficient uterine action.

The extract augments the secretion of the urine, and in cases of peritonitis its action is very beneficial, because it produces a moderate rise of blood-pressure, stimulates intestinal peristalsis, and increases the flow of the urine. By its stimulating action on the intestinal muscles it is used in many conditions of intestinal paresis, and the results obtained upon paralysed and distended intestines have been very satisfactory.

It also produces increased secretion of milk, and is used as a galactagogue.

Clinical Observations.—From clinical observations pituitary extract produces little or no result when given by the mouth, but various changes have been produced when given by subcutaneous, intramuscular, or intravenous injection. In the past few years its importance has rapidly become recognised by many practitioners, and I cannot enumerate all the various conditions and diseases in which the drug has been used.

Unpleasant results have been recorded after the administration of pituitary extract, but although I have used it in many cases I have had no unpleasant results.

I have given the extract in many cases of shock, but I admit that I have often sought the assistance of other drugs, such as strychnine, digitalis, and ether, and also of saline injections.

At the Chesterfield and North Derbyshire Hospital a great many cases suffering from shock were admitted during my period of residence there ; many in a profound condition of shock, produced by injuries received in

mining pits or in coal and iron works. Some of these cases received their injuries three or four hours before they could receive proper medical attention, and some had to be conveyed twelve miles before they reached hospital. Several of these cases died from shock soon after they were admitted, and I believe that had I been able to have administered sooner saline and pituitary extract, the result in at least some of the cases would not have been fatal. Frequently, men suffering from traumatic amputation of a limb or lacerations of the abdomen or chest were admitted to hospital in such a condition of shock that we were unable to assist the patient with surgical treatment till we had lessened the amount of shock present. In many of these cases I immediately gave 1 c.cm. of Messrs. Burroughs, Wellcome & Co.'s pituitary extract, and as a result the pulse became slower and fuller, and the blood-pressure was raised to such a degree as to permit the necessary operation for the patient's welfare. In these cases I also gave gr. $\frac{1}{60}$ of strychnine and 1 to 2 pints of saline, but I believe that the results would not have been as satisfactory if I had not also injected pituitary extract.

In other cases the amount of shock present when the patients were admitted did not necessitate an injection of the extract, but afterwards during the operation when the condition of shock seemed to be increasing—the pulse becoming faster and weaker—I injected the extract, and in most cases the pulse soon became slower and fuller.

I have given pituitary extract also in several cases of *post-operative* shock. In these cases I believe that the pituitary extract by causing vaso-constriction of the peripheral arterioles helped to pull the patients through during the critical period of vasomotor breakdown. On salines, however, the responsibility rested of maintaining any improvement produced.

In cases of burns the patients, especially children, die more frequently from shock than anything else, and I am of the opinion that the extract should be given with saline in all serious burns as soon as possible. Saline alone does

not produce vaso-constriction, and hence the valuable help pituitary extract is in these cases. The effect of a single injection lasts several hours, and in many cases the patient has passed the critical period before the effect of the injection has passed away.

The results obtained in acromegaly after treatment with pituitary extract have not been very successful, although Broadbent states that he noticed great improvement of his patients suffering from this disease after he treated them with the extract, and Rolleston states that there was marked improvement in one case of three years' standing, which persisted after the administration of the drug was discontinued.

In Graves's disease the results also have not been very satisfactory.

Good results have been obtained by the administration of the preparation in paralysis agitans.

To Dr. Bell we are indebted for being one of the first to recognise the value of pituitary extract in the pregnant, puerperal, and menstruating uterus. From his clinical observations he found that after an injection of pituitary extract not only were the contractions in the human uterus made more powerful, but they are more prolonged than are those produced by any other drug.

In two cases of Cæsarean section he had the opportunity of observing the naked-eye effect of a single injection, and to quote his own words, "the effect is immediate and convincing: the uterus contracts into a blanched "ball," and only relaxes subsequently to a moderate degree."

Subinvolution of the uterus, due to defective contraction and retraction, is one of the dangers subsequent to a Cæsarean section, but I believe that this danger is in most cases removed if an injection of the extract is given immediately the operation is performed.

In all serious cases of *post-partum* hæmorrhage pituitary extract should be given in preference to ergot, because not only does it act sooner, but it also produces more powerful and more prolonged uterine contractions. In

hæmorrhage due to carcinomata of the uterus the result has also been satisfactory.

In the many serious obstetric complications and difficulties, when we want to produce uterine contractions, I am of the opinion that we should rely on pituitary extract. In sapræmia, which occasionally occurs after parturition, pituitary extract keeps the uterus firmly contracted, and thus shuts out further septic absorption.

The extract acts better on the atonic uterus than it does on the contracting organ, just as it does in conditions of shock upon the blood-vessels.

Bondy tested the value of pituitrin in ten cases of delayed labour due to insufficient uterine action, and in eight of these cases he obtained a good result after an injection of 1 c.cm. of the extract.

Pituitary extract seems to act, as with the blood-vessels and uterus, more powerfully upon the atonic and distended intestine than when it is in its normal condition, and to Dr. Bell we are again indebted for being one of the first to show us from his clinical observations the good results obtained by the extract upon the paralysed and distended intestine. He states that he has used it in a fair number of cases, and has never known it to fail. He cites several cases of intestinal distension following operation for acute appendicitis, and the success of pituitary extract in relieving this distension, and producing an evacuation of the bowels after other drugs, such as calomel, had failed to produce a motion.

In the *British Medical Journal* of May 23rd, 1914, Dr. Norman Porritt writes: "In the two following cases pituitrin was a valuable auxiliary to other measures for supporting vital power and overcoming intestinal torpor.

Case I.—A girl, aged nine, whose appendix was removed a week after the subsidence of an acute attack; gradual distension of the abdomen occurred and persistent vomiting. Calomel by the mouth and turpentine enemata failed to relieve the distension. Parke Davis's pituitrin 0.50 c.cm. was injected subcutaneously, and in an hour the pulse fell from 130 to 115,

and became fuller and steadier, and flatus began to be expelled per rectum. After this the distension gradually disappeared and the patient made a good recovery.

Case II.—A woman, aged forty-two, was seen on April 1st, 1914, when she had acute appendicitis. Five hours after she was operated on. A few hours afterwards she had 3 grains of calomel and gr. 1 every hour till her bowels moved. The following day she became more distended and her bowels had not moved, and even a turpentine enemata brought away neither fæces nor flatus. One c.cm. Parke-Davis pituitary extract and $\frac{1}{30}$ gr. of strychnine were given the second morning after the operation; in half an hour free expulsion of flatus and a copious liquid motion took place. Patient made a good recovery.

It is well known that intestinal distension is a frequent complication of appendicitis and peritonitis—not only a discomfort, but even a danger to the welfare of the patient. The value of pituitary extract in overcoming this complication has been definitely proved.

In several cases of toxæmia due to appendicitis and peritonitis I have administered pituitary extract. I usually injected 1 c.cm. of Messrs. Burroughs, Wellcome & Co.'s pituitary extract subcutaneously, and also 1 to 2 pints of saline. Both being repeated in 4 to 6 hours if necessary. I believe that in all serious cases of toxæmia both pituitary extract and salines should be given; the pituitary extract besides raising the blood-pressure and stimulating the heart muscle and intestinal peristalsis, also increases the flow of urine, and thus also helps with the saline in eliminating the toxins in the blood.

Good results have been obtained in typhoid fever, tuberculosis, influenza, and septicæmia, and in many other diseases where toxæmia is present.

Dr. Drake-Brockman reports favourably on the use of the drug in the treatment of cholera to produce vaso-constriction of the blood-vessels, and thus prevent the drain of fluid from the body.

In some lung diseases, such as asthma and pneumonia,

pituitary extract has been found to produce a beneficial effect.

In osteomalacia the results from pituitary extract were various : some cases deriving benefit and some not. In cases of neurasthenia, with a dilated stomach and cold extremities, a mixture of thyroid and pituitary extract has produced good results.

Conclusion.—I have endeavoured to point out in this thesis the favourable results that have been obtained in various abnormal conditions due to injections of pituitary extract. I have cited the success that some leading practitioners have obtained, and also the benefit some of my own patients have derived from it.

In cases of shocks I think the extract is very valuable, and I believe that in all serious cases 1 c.cm. of the extract should be given as soon as possible. Doctors have often to send cases of serious injuries eight, ten, or twelve miles before they can reach the nearest hospital, and I believe that much good would be done if these cases were immediately treated with pituitary extract instead of leaving the patient to await hospital treatment

The value of ergot is well known ; but although pituitary extract has been shown to possess greater action on the uterine muscles, yet this does not seem to be recognised by a great majority of general practitioners. I believe that it should be carried in every physician's obstetric bag.

The true relationship between the testes and ovaries and the pituitary body is still a matter of discussion. According to Blair Bell excess of function of the pituitary gland is also associated with increased sexuality in the male, and with amenorrhœa in the female. During lactation pituitary extract increases mammary secretion.

Although much light has been thrown on the pituitary gland, and I have reviewed some of the important results obtained, there are still many problems awaiting solution.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

RECENT WORKS ON INFANT FEEDING.

1. *Infant Feeding.* By CLIFFORD G. GRULEE, A.M., M.D., Assistant Professor of Pediatrics at Rush Medical College, Chicago. Second Edition, thoroughly revised. London: W. B. Saunders Company. 1914. 8vo. Pp. 314. Illustrated.

2. *The Child's Diet.* By J. SADLER CURGENVEN, M.R.C.S., L.R.C.P. Second Edition. London: H. K. Lewis. 1914. Cr. 8vo. Pp. viii + 115.

1. DR. GRULEE has not materially altered the arrangement of his excellent book on infant feeding in bringing out the second edition. He has, however, brought the various chapters quite up to date. The book is divided into four parts: Fundamental Principles, Breast Feeding, Artificial Feeding, and Feeding under Special Conditions—this last including eczema, rickets, scurvy, and other infantile diseases.

Of the various sections, that on Breast Feeding is the scantiest, and the writer might with advantage have drawn more freely on the recent writings of the English school of paediatrists than he has done. The book, however, in other ways has been brought completely up to date, and forms a useful handbook on all questions relating to nutrition. One particularly useful feature is a series of coloured plates representing various abnormal motions. The other illustrations are also excellent.

2. THIS is a small handbook giving advice on the subject of the feeding of children from birth up to the third year. The book had not been materially altered in the new

edition, but has been somewhat enlarged. The keynote of the whole treatise is the inadvisableness of giving children large quantities of carbohydrate, and of giving carbohydrate in a form which does not require mastication.

Any doctor who finds a difficulty in making his little patient's mother understand this method cannot do better than present her with the book, for it contains numerous excellent and palatable recipes as well as menus of the various meals for children of different ages

Like many other apostles of the creed of "chewing," however, Dr. Curgenven goes a little too far sometimes. For instance, in his anxiety to provide only hard and crisp forms of starchy food we find that porridge is not so much as mentioned in the book, although we must allow that many a healthy Highlander at any rate has been reared on this diet.

However, the book may be strongly recommended to nurses, practitioners and mothers alike, and its price (2s. 6d.) puts it within reach of all.

Operative Surgery : the Head and Neck, the Thorax and the Abdomen. By EDWARD H. TAYLOR, M.D., B.S. (Dub. Univ.), F.R.C.S.I. ; Professor of Surgery in the University of Dublin. London : J. & A. Churchill. 1914. Pp. xi + 524.

WE have read this work with great interest, coming as it does from one of the leaders of the Dublin Surgical School. The book is confined to operations on the head, neck, thorax and abdomen, and in these regions deals only with the more important surgical procedures, omitting operations on the spleen and urethra and also certain rare operations, such as suture of the heart. The striking feature of a beautifully finished book is the excellence of the illustrations. Infinite trouble has been taken to make the 300 figures descriptive, and the originality in almost every case adds considerably to their value.

The short account of technique with which the volume opens, if not descriptive of anything very new, lays care-

ful stress on all that is useful and omits the "padding" which hampers so many similar works. We would have been glad in this section to have heard more of Crile's work on anoci-association, which at present is occupying so much surgical attention. We venture to say that the descriptions and illustrations in connection with cranial and abdominal surgery are the best in any book dealing with general surgery in the English language.

The author relates concisely the indications and contra-indications for operation; each step from the making of the incision to the closure of the wound is then dealt with *seriatim*, and finally the possible difficulties in after-treatment are considered.

The reader is not troubled with a variety of alternative methods, the author has weighed carefully the merits of the various operations in vogue and selects that one which experience has taught him to be the best.

It will be seen from the foregoing that Professor Taylor's book is arranged so as to be an accurate and convenient guide for those engaged in operative surgery. The work is unique in the literature of operative surgery for its anatomical accuracy, and thus it will be particularly valuable to the hard-pressed surgeon who has become rusty in this department.

The size of the pages, the print and the manner of producing the illustrations is designed to popularise a work the success of which is already assured.

Much credit is due to the author, the artists and the publishers, and we congratulate them on the production of a volume which has already been described by experts as "monumental."

Treatment of Neurasthenia. By Dr. Paul Hartenberg. Translated by Ernest Playfair, M.B., M.R.C.P. Edinburgh, Glasgow and London: Henry Frowde and Hodder & Stoughton. 1914. Cr. 8vo. Pp. viii + 283.

We have read with much pleasure and profit this excellent translation of Dr. Paul Hartenberg's suggestive work.

While proposing to deal only with the treatment of this distressing and difficult malady, the psychic symptoms and manifestations having been analysed in his previous "Psychology of Neurasthenia," the book will be found to contain a fairly complete account of the condition generally. We have seldom enjoyed the perusal of a medical work to the same extent as in this case—certainly none dealing with the same subject. The most intimate knowledge of the disease is displayed on every page, the conclusions reached appear inevitable from the arguments and evidence adduced, and above all the method of handling the patient is thoroughly practical and sensible.

There is so much food for reflection in the relatively small compass of the book, that we can do no more than notice some of the main points.

Neurasthenia must be considered a state of "simple nervous depression," its most prominent symptom being undue liability to fatigue. All the varied complaints of the true neurasthenic can be traced to this undue fatigability, and arising from this a train of symptoms one sometimes finds difficult to reconcile with the diagnosis—namely, those depending on the increased irritability which accompanies fatigue. Neurasthenia must be clearly differentiated from melancholia, hypochondriasis, and the various phobias and obsessions which, though they frequently accompany, are no part of the neurasthenic state.

Two main varieties are to be met. The first he calls "accidental," in which undue strain or some abnormal circumstance causes the appearance of the disease in a subject with somewhat diminished resistance—*i.e.*, with increased susceptibility to fatigue. This type is easily curable. The second variety includes those in whom the mere accomplishment of bodily functions serves to induce constant fatigue; such cases can exist only by rigid avoidance of all effort. They are hereditary neurasthenics, are practically incurable, but are fortunately much less common.

Treatment is considered under three heads:—(1) That

of the exciting cause; (2) that of the depression by such means as rest, tonics, psychotherapy, &c.; (3) that of the prominent symptoms. Amongst many helpful suggestions (and the author tells us he has tried every known treatment) we note only one—the use of strychnine sulphate in large doses, as much as a grain per day being given. This he regards as "the indispensable drug for asthenia."

Not the smallest merit of the book is its cheapness, and we can guarantee it to be a very profitable investment.

A Handbook of Fevers. By J. Campbell M'Clure, M.D. Glasgow; Physician to Out-Patients, the French Hospital, London, and Physician to the Margaret Street Hospital for Consumption and Diseases of the Chest, London; formerly Senior Resident Assistant Physician, Assistant Superintendent, and Resident Medical Officer in charge of the Smallpox Hospital, Belvidere Fever Hospital, Glasgow. London: Shaw & Sons. 1914. Demy 8vo. Pp. viii + 470.

We have carefully looked through this book and can recommend it as a clear, compact and complete student's manual. We particularly like the way in which the author deals with the treatment not only of each fever but also of the complications. In many books the treatment of complications is dismissed with the statement that they are to be dealt with along general lines, and the result is that the student or recently qualified medical man is quite at a loss when actually called on to treat almost any complication that he has not previously met with in association with the particular disease that the patient is suffering from. A student requires fairly dogmatic teaching, more especially on the subject of treatment. He wants to know, not everything that has been recommended by somebody, but what his teacher has actually found of value. This he gets in a better form than usual in this volume. The teaching as regards symptoms, prognosis, &c., is equally direct.

The book is very well up-to-date. The only important

omission we note is the absence of any reference to the use of emetine in dysentery. There is a chapter on pellagra and an appendix on serum treatment of tuberculosis.

Clinical Laboratory Methods. A Manual of Technique and Morphology designed for the use of Students and Practitioners of Medicine. By ROGER SYLVESTER MORRIS, A.B., M.D., Associate Professor of Medicine in Washington University, St. Louis. With 262 Figures and 2 Coloured Plates. New York and London: D. Appleton and Company. 1913. Demy 8vo. Pp. xx and 343.

THIS is not a text-book of Clinical Pathology, and does not attempt to discuss the significance of the abnormal conditions, the means of detecting, which it gives in detail. It gives methods for examining physically, chemically, and microscopically, urine, gastric contents, fæces, sputum, blood, and puncture fluids, but does not attempt either the more exact and elaborate methods of physiological chemistry, or the methods of serum diagnosis such as the Wassermann and Widal tests.

We have had the book in use for some months, and have found that it invariably gives the most easily carried out, useful, and modern methods, and that its descriptions of abnormal cells, crystals, parasites, &c., are clear and easily followed.

A Text Book of General Bacteriology. By EDWIN O. JORDAN, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. Fourth Edition. Philadelphia and London: W. B. Saunders Co. 1914. Pp. 647. Figs. 178.

JORDAN'S BACTERIOLOGY was first published in 1908, and the appearance now of its fourth edition is an indication of the popularity of the book. If we compare the fourth with the first edition, we find it increased by the addition of 90

pages, 15 illustrations, and an entire new chapter, as well as a much more complete index. Some of the advance which has been made in the six years is reflected in the volume. The successful cultivation outside the body of the specific organisms of leprosy, and of various protozoal diseases, including malaria, kala-azar, relapsing fever, and syphilis, with which is associated the definite and conclusive proof that Treponema pallidum is the cause of the last-named disease, and the discovery of a whole group of filter-passing viruses are notable achievements. To these last, which include small-pox, rabies, yellow fever, scarlatina, measles, typhus, epidemic infantile paralysis, and others, the new chapter is devoted. Many other chapters have been partially rewritten; the account of the Wassermann reaction, only mentioned in the first edition, is complete and clear, and there have been added many newly described protozoal diseases and bacterial diseases of plants, and the results of new investigations of the use of bacteria in the arts and industries. Altogether this new issue maintains the high standard of former editions.

A Short Handbook of Cosmetics. By Dr. Max Joseph, Berlin. Second English Edition, revised, with Appendix. London: William Heinemann (Rebman, Ltd.). [No date on Title page.] Pp. ix + 97.

Neither the medical profession nor the public has been quite fairly treated by the translator and the publisher of this "Edition" of Dr. Max Joseph's excellent "Handbook of Cosmetics." We read on the back of the title-page that the English translation was "first published December, 1909, reprinted January, 1911," and that this is a "revised edition, 1914."

Strictly speaking, the book before us is not a "revised edition"—it is a "reprint" page for page and word for word, with an introductory table of "Errata," many of which we pointed out in our appreciative notice of the 1910 edition (see Vol. CXXIX., third series, No. 458, February, 1910, page 129), and an "Appendix" by the

translator running to eight and one-third pages, the contents of which do not find a place in the unaltered Index.

The translator, who is still modest enough to conceal his identity under his initials, "D. J. G.," appears to have read our notice of the 1910 issue, for he writes in the Appendix under the heading "Glycerine"—It is to be noted that "the smarting and burning sensation which, owing to its dehydrating action, follows the application of glycerine, may be obviated by moistening the hands with water before applying the remedy." In our review, in 1910, we wrote as follows :—"The dehydrating action of glycerin is duly noted at page 27, but the unpleasant results of the process, such as smarting, are easily avoided by diluting the glycerin ever so slightly. For example, after washing the hands and rinsing them in clean water, no burning sensation is caused if the glycerin is applied while the hands are still wet."

Waiving a certain prejudice which the misdescription of this issue of Dr. Max Joseph's book has excited in our mind, we can highly recommend it as a most instructive and useful monograph on a subject to which too little attention has been paid by British and Irish physicians in the past.

Advice to a Wife. By DR CHAVASSE. Sixteenth Edition. Revised by STANLEY DODD, M.A., M.B., B.C., M.R.C.P., &c. London : J. & A. Churchill. 1914. 8vo. Pp. 348.

THE fact that a book of this kind has run to its four hundred and twentieth thousand, and always appears to be worth revising and re-editing, shows that Dr. Chavasse's writings have a charm all their own.

Manuals of instruction on the management of pregnancy and infancy pour daily from the Press, but none seem to take the place of the old-fashioned "Advice to a Wife" and "Advice to a Mother" in the hearts of the great majority of wives and mothers.

The quaint language, the apt poetical quotations and the flowery perorations all combine to give the book a unique character.

It seems odd nowadays to read a book in which women are always called "ladies," and still more strange is it in these days of hurry and bustle, of golf and committees, to be told that most of our ills come from lack of exercise and moping too much in the house! Yet the fact that these points do not spoil the usefulness of the book show that Dr. Chavasse has written for a larger circle than his early Victorian "delicate ladies." Dr. Dodd has shown great skill in his revision by bringing the book fairly up-to-date without "showing his hand" too much. He has also added a small section on sexual hygiene which was not in the original.

The Infant: Nutrition and Management. By Eric Pritchard, M.A., M.D. (Oxon.), M.R.C.P. (Lond.). London: Edward Arnold. 1914. 8vo. Pp. vii + 265.

Those who expect from this title to find one of the usual handbooks on the management of infancy will be disappointed, but anyone knowing Dr. Pritchard's name and opening his book with a keen sense of expected pleasure will assuredly not be disappointed. Nothing less like the ordinary compiling and copying method of the usual text-book can well be imagined, for Dr. Pritchard gives us twelve separate and rather disconnected chapters on subjects varying from petroleum to physiology, but each one teeming with originality, interest and food for thought, while his pleasant style makes the whole most delightful reading.

In the first chapter he gives a synopsis of most of the recent work on lactation, adding experience of his own chiefly on the value of the "test feed."

The next three chapters go deeply into the physiology of digestion and metabolism of infancy, and are of the greatest interest.

After these come some chapters on common ailments

among which is rickets. Here the author departs pretty widely from the general views on this subject, and after dealing with the complicated character of the disease he sums up by describing it as the result of "an inefficient liver associated with a disturbed central nervous system acting and reacting on one another."

The book also contains practical articles on the therapeutic use of petroleum, on dried milk, and on the value of schools for mothers.

The only flaw in the book is the index, which is scanty and sometimes incorrect.

It is to be hoped that enough has been said to induce those interested in pædiatrics to buy the book; for it is certain that after the first glance they will not lay it down again until they have finished it, and nobody can finish a book of Dr. Pritchard's without feeling stimulated to fresh effort, thought and observation of their own.

Obiter Scripta. Throat, Nose and Ear. By A. R. FRIEL, M.A., M.D. Bristol: John Wright & Sons, Ltd. 1914. Pp. 40.

"THE best goods are made up in the smallest parcels" is a saying at once old yet still often true. It applies with particular force to the little book under review. "Obiter Scripta" contains but forty pages, but as the author has not tried to pad it, and has just written down some things that occurred to him in every-day work, each page has its lesson.

His method of stitching the pillars of the fauces is clearly shown by a small woodcut, and is easily carried out. He gives a clear account of methods of treatment and of their modes of application—for example, electrolysis of the nasal mucous membrane and zinc ionisation of the accessory cavities. He also shows how ozæna may be helped by the latter treatment.

The book can be confidently recommended as quite worthy of a place in any specialist's bookcase.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

SYPHILIS OF THE BLADDER.

MM. A. Lévy-Bing and L. Dureux (*Gazette des Hôpitaux*, 30 Jan., 1914), write: Syphilis as a constitutional disease respects no tissue or organ, and the mucous lining of the bladder is, as others, subject to attack. Its vascularity is great, its congestion easy of production and not unusual, and so favours the localisation and development of the Treponema of Schaudinn.

This fact has been completely ignored for many years past. Urinologists at the end of the last century made no mention of the vesical lesions, which they omitted in their descriptions of the syphilitic lesions of the urinary organs, they passed without change from the kidney to the urethra, and from the urethra to the prostate. The great majority of the monographs on urinology and on syphilography contain but little information on the subject. Guyon (*Leçons cliniques sur les maladies des voies urinaires*, 1903, 4 ed., t. 1, p. 21) denies the possibility of the existence of syphilitic lesions of the bladder. "The urinary bladder," he says, "is generally regarded, and with reason, as immune to the infection of syphilis;" and, after recounting the troubles and symptoms of micturition due to complex causation (medullary and syphilitic), he adds: "As for the lesions proper to the urinary organs, the kidney alone and to a slight extent the ureter appear to be affected by syphilis." In the first edition of his remarkable work (*Traité sur la Syphilis*, Paris, 1899), Fournier passes over in absolute silence the question of vesical syphilis: Nogues, in the second edition of 1906, expresses doubt of the value of observations on the subject. In the opinion of Desnos and Minet (*Traité des maladies des voies urinaires*, 1909, 3Op., ch. x. p. 723) the existence of syphilitic ulcerations of the

bladder is very doubtful. Seuls, Hallopeau and Fouquet, in their treatise on syphilis, Lequew (*Traite d'urologie*, 1910, p. 689), admits the very rare presence of tertiary symptoms in the bladder and describes their pathological characters.

The literature of foreigners contains very little on the subject. Prosch (*Zur Geschichte und Pathologie der syphilitischen Ulzerationen der Harnblase, Viert. f. Dermat. und Syphilis*, 1879, s. 555), in his bibliography of syphilis, passes in review the numerous descriptions of autopsies of syphilitics received thus and in medical literature, and mentions some cases of ulceration of the bladder, the majority of which do not show any specific character, but some incontestably do. Kaposi (*Path. und Therapie der Syphilis*, Stuttgard, 1881, s. 293) states that, in very rare cases, he found, in the lower extremity of the ureter and in the bladder, ulcerations and cicatrices which very closely resembled those of the gumma of syphilis. Casper (*Lehrbuch der Urologie*. Berl.-Wien. 1903 s. 223) was not able even by the aid of the cystoscope to detect a syphilitic ulcer in the bladder. Frisch and Zuckerkandl (*Hand. der Urol.*, 1904–1906) are silent on the question, and Nitze, in his *Traite de Cystoscopie*, writes that "the cystoscope does not admit of our affirming the presence of vesical syphilis"—a statement difficult of acceptance, for there exists, in literature, an account of numerous vesical lesions of undoubted syphilitic origin.

The diagnosis of these lesions has in the ages passed through many stages, which cannot fail to interest. First, when the idea of the nature of syphilis was very erroneous, and the means of investigation very deficient, we know that on the anatomy table the retrospective diagnosis of ulcers was unknown; this is the case in the reports of Morgagni, of Ricord, of Vidal, of Cassis, and of Tarnowsky. Afterwards the diagnosis came to be based on the history of the patient, the clinical record and the co-existence of gummata in other organs, and to be confirmed by the use of mercury: Neumann, Grivzow, Chrzelitzer. To-day the cystoscope extolled of Nitze, who perfected and popularised it, gives us evidence incontestable of the condition of the walls and neck of the bladder, of the mucous neoplasms; and it allows of the examination of the ulcerations and of their progressive improvement and dis-

appearance under specific treatment. Finally, the reaction of Wassermann, of which we day by day note the results, remove the doubts and confirm the diagnosis. We have had occasion to watch a case of secondary syphilis of the bladder, and we have been able, by cystoscopic examination to confirm the progressive improvement and disappearance of the lesions under the influence of mercurial treatment.

Neither age nor sex appears to influence the appearance of syphilitic lesions in the bladder. Vidal de Casés admits the possibility of a vesical chancre. Such an eventuality is impossible. Even in the female the pathological agent is unable to reach the interior of the bladder in the presence of the downward flow of urine. [A syphilitic chancre might, however, occur in the urinary bladder under such conditions as Casper describes of prostitutes dilating the urethra to an extent to admit of sexual connection.] There does not exist in medical literature an account of a primitive urethral chancre located further than 5 or 6 centimetres from the external orifice. Even in these latter years all the observations go to show that the ulcers are of the tertiary period. Secondary vesical lesions are revealed by phenomena of cystitis, and were first described in 1909. Vesical lesions of the secondary and tertiary periods do not manifest themselves until long after the appearance of the primary chancre ; we have known a case of vesical gummata occurring twenty years after contagion ; these lesions may exist accompanied or unaccompanied by lesions of the skin, mucous membranes of other viscera.

Secondary syphilitic lesions of the bladder develop insiduously ; they usually occur on the base or on the lateral walls close to the urethral orifice, and are sometimes accidentally discovered on cystoscopic examination. But it more usually follows that they are detected by symptoms of a more or less marked cystitis : frequency of micturition, pain in the region of the bladder and pyuria ; at first these symptoms are not well marked, but they rapidly develop in intensity. The micturition troubles are very variable. Micturition becomes much more frequent than normal, sometimes occurring every hour, half-hour, and even as often as every ten minutes ; and in proportion to the site of the ulcer being near or distant from the meatus so is the urgency of the call to micturate ; the urgency to micturate is not lessened by repose in bed, and is as persistent during the

night as by day. Pain is constant in the region of the bladder and in the perineum; it radiates along the urethral canal and sometimes along the urethral canal as far as the meatus urinarius; at other times the pain is referred to the rectum, the lumbar region and down the thighs. Its intensity is variable; in the intervals of micturition it is slight; it consists of a feeling of weight in the hypogastrium, of uneasiness in walking or on being seated, or of a smarting pain in the perineum or vulva; during micturition the pain is increased in volume and intensity of the utmost violence; finally, these are associated with a tenseness and a sharp distressing desire to empty the bladder, which has just been done. Sometimes there is an inability to retain the urine. The capacity of the bladder may become diminished until it is not more than sufficient to hold 60, 80, or 100 centimetres of water when filled for cystoscopic examination. The urine is but slightly modified, being a little less clear than normal; it is occasionally slighty coloured, when the termination of the act of micturition is followed by the emission of some drops of blood. Microscopic examination of the residum of centrifugation shows the presence of leucocytes in greater or less numbers and among them the nuclei of epithelial cells and red blood corpuscles; but of microbes, the Spirochæte pallida is not found. Further we find the general health suffers: wasting and loss of appetite, headache and a sensible rise of temperature.

Examination of the patient by the ordinary routine method would give no hint of the vesical troubles; it is only by rectal palpation in the male or vaginal palpation in the female that the vesical condition can be recognised. The cystoscopic examination gives precise information of the site, the number, and the shape of the lesions. They exhibit two conditions: maculæ and ulcerations. The maculæ are dark red spots, similar to the rash of Rötheln, disseminated on a hyperæmic mucous surface; the lesions pass unnoticed, being unaccompanied by pain. The ulcerations of the bladder are variable in number, ranging from two to twelve; they are round or oval and vary in size from that of a lentil to that of a haricot bean. They are usually situated between the orifices of the ureters, in the region of the trigone, but we sometimes found them on the walls of the viscus; they are sometimes

disseminated, more usually they are found in groups, separated by irregular intervals; their margins are slightly raised, their base is pale and rests on the œdematous mucous membrane of the bladder, hyperæmic, of a dull red colour, at the level of which the greatly dilated blood vessels form an appreciable prominence. The orifices of the ureters are normal, and the rest of the mucous membrane is healthy.

An examination of the other mucous organs show the presence of secondary lesions; but the vesical lesions may be independent of the existence of all other evidence of syphilis. Tertiary syphilis presents no characteristic syphilitic lesion in the bladder. Gummata come as other tumours, and the diagnosis of the gummatous processes is not possible without the history of the case, or the presence of specific lesions on cystoscopic examination. The beginning is sometimes insiduous, it is suspected on the appearance of trouble on micturition and sharp short passing pains accompanied by a sensible coloration of the urine.

But the local affection usually reveals itself by the phenomena of cystitis, and again by a sudden and unexpected hæmaturia. Hæmaturia may be the sole symptom during the duration of the disease: it may be considered a constant phenomenon. The symptom presents certain special characteristics; the bleedings occur spontaneously, the patient finds that he has suddenly passed a stream of red urine; the micturition is neither difficult nor painful; occasionally a blood clot obstructs the urethra and threatens a temporary but complete retention of urine. Neither rest nor confinement to bed arrests or diminishes the blood flow; it persists for days, sometimes for weeks, afterwards little by little the urine clears and assumes its normal state. The bleedings come on at intervals of variable length, every month, or every two months, and they vary greatly in the amount of blood lost; in the more serious cases the urine resembles pure blood, and forms at the bottom of the chamber vessel a thick dark brown clot. The bleedings increase with the duration of the illness; the increase gives some proportionate measure of the extent of the lesion and of the liability to further dangerous outpourings. The loss of blood in advanced stages of the disease is usually accompanied with pyuria; but the chemical composition of the urine remains unchanged, and

in it we find an increase of red corpuscles, and numerous leucocytes more or less degenerated, epithelial cells and more or less mucus; the heterogeneous microbes which it occasionally contains are the results of a secondary affection.

Pain is an inconstant phenomenon. When present it affects the same parts and in all respects resembles that of secondary syphilis; but at times it becomes almost unbearable, the patient is restless and agitated and constantly seeks to get a posture in which the pain is less severe. Less marked during the intervals of micturition, it becomes intensified when the act of micturition is coming to an end, especially if the tumour is in the trigone of the bladder and it is followed by severe tenesmus. The injection of water into the bladder for cystoscopic work, particularly if quickly done, causes great pain, so much so that the cystoscopy cannot be performed; such manipulations should be immediately preceded by a hypodermic of morphine. The injury to the general health of the patient, more or less pronounced, depends on the amount of blood lost, the presence of pyuria, the site of the lesion, the number and size of the neoplasms. At times the loss of blood is so great that the patient, in a few weeks, comes to an extreme degree of pallor, weakness, cachexia; but, as a general rule, there is a striking contrast between the intensity of the vesical phenomena and the state of the general health.

An abdominal examination does not generally give much information; in the case of large gummata the summit of the bladder rises slightly above the pubic arch, and sinks down when the urine is voided. In a similar way, we can recognise, by the touch, vaginal or rectal, the presence of a vesical neoplasm which may be recognised by its irregular shape, unequal consistency, and by the increased thickness of the vesical wall. A cystoscopic examination may at first fail to yield satisfactory results: a hæmorrhage, by destroying the clearness of the urine, and numerous blood clots may hide the lesions of the mucous membrane. In such cases it is necessary to clear the bladder of blood and of blood clots, and it may be necessary to make two or three tentative attempts to obtain sufficient evidence.

Vesical lesions of tertiary syphilis as seen by the cystoscope show two different varieties. The more common are ulcerations resulting from a sloughing of the centre of the

parietal gummata and not infrequently from papillomatous ulcers. The ulcerations present special characteristics; their numbers vary from one to three; they are sometimes round, occasionally oval, more or less extended, and some are as large as a shilling; their edges are raised above the mucous membrane, and the floor of the ulcer is prominent; their margins are jagged, the sides vertical, and the base is greyish; we sometimes see two or three little red bodies on the floor of the ulcer, caused by extravasated blood; at other times we find the floor of the ulcer covered by gummatous material, and any attempt to remove this is followed by bleeding. Round the ulcer the mucous membrane is bloodshot and œdematous, of a livid red colour, which markedly distinguishes it from the rose colour of the healthy tissue, the infected blood vessels of the part are prominent and marked by more frequent and larger sinuosities than usual.

Papillomatous ulcers are unusual in tertiary syphilis; papillomatous tumours are frequent to the number of two or three, they vary in size from that of a pea to that of a nut, and are seated directly on the mucous membrane, their surface is smooth, of a dull rose colour, and over-run by torturous and dilated blood vessels. The two lesions—ulcers and papillomata—may both be present, from co-existent evolution.

The lesions of secondary syphilis disappear at the one time; they gently develop without any tendency to cure; they are and remain superficial; they quickly improve under treatment, and the white cicatrices disappear within a month or two. The tertiary lesions also present no tendency to spontaneous cicatrisation; they tend to extend over the mucous surface and to engage more and more the surface, penetrating at times to the muscular coat and even to penetrate the vesical walls. The peritoneal surface is also penetrated if the destructive process has been too rapid to admit of adhesions; if the perforation is gradually produced, the intestine becomes fixed to the bladder wall and a vesico-intestinal fistula results. If the site of the ulceration is on the inferior surface of the bladder a vesico-vaginal or a vesico-rectal fistula may result.

Vesico-intestinal fistulæ are recognised by constant phenomena: the escape of urine partly by the urethra and partly by the anus. When the patient comes under

treatment the vesical phenomena disappear, bleeding becomes less and less in amount, and the general condition improves, strength returns and the pallor of the mucous surfaces lessens; the vesical lesions diminish, the ulcerations cicatrise and heal, the papillomata shrink up and wither away, and, in about a few weeks, there remains no more than a few cicatrices, clearly distinguishable from the soft flexible healthy mucous membrane. The cicatrices are more persistent than more deeply seated lesions, and may return six months after their disappearance.

Diagnosis.—The syphilitic lesions of the internal viscera present no specific characters; this fact should make us always bear in view the possibility of the disease. This axiom of Fournier is more applicable to the urinary bladder than to any other viscus. The subjective phenomena by which the syphilis of the urinary bladder is recognised, when taken separately, are insufficient to admit of a diagnosis; in a group, they form on the contrary a mass of evidence sufficient to warrant the diagnosis of syphilis. The diagnosis rests on:—(1) The subjective phenomena: pain, hæmaturia, pyuria; (2) the characters of the mucous lesions; (3) the slight abnormality of the urine and, above all, the complete absence of microbes (we never found a spirochæte in the urine); (4) the general health relatively satisfactory and not in accord with the local lesions, more or less grave; (5) the history of syphilis; (6) the coincidence of specific lesions in other organs. When these two latter evidences are wanting we should confirm our diagnosis by the Wassermann test and by the effects of mercurial treatment. Secondary syphilitic lesions of the bladder are sometimes difficult to differentiate from those of acute or chronic cystitis, but by attention to the symptoms of syphilis of the bladder enumerated above the difficulty will be overcome.

Treatment.—Syphilitic lesions of the bladder are not influenced by the routine treatment which we employ for the ordinary affections of this organ. Injections of morphine give a very temporary relief from pain. Warm baths do not give any ease from the tenesmus. Bleedings are not controlled by injections of ergotine. The dietetic treatment consists of a milk diet. Medicinal treatment is by urotropine, methylene blue (methylthionine hydrochloride). Local treatment.—Lavage of the bladder with feeble solutions of nitrate of silver

or boric acid, which do not procure any relief. The treatment of vesical syphilis is by mercury. Mercurial frictions are in favour in Germany; it is advisable to sometimes use injections of soluble mercurial salts (biniodide or benzoate), should the action of the salt become more active than anticipated, the iodine and mercury mixture may be used. In all cases the effects are most satisfactory, the superficial secondary ulcerations disappear in eight to fifteen days; the gummata are a little longer in going, but, as a rule, they are all gone in a month. We disapprove the local treatment by lavage. In our cases we use mercury, and it is evident that intravenous injections of salvarsan or of neosalvarsan give still more rapid results, especially in syphilitic ulcers of the bladder.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

THE College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about two hundred and fifty dollars, will be made on July 14, 1915, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in Medicine, but cannot have been published. They must be typewritten, and if written in a language other than English should be accompanied by an English translation, and must be received by the Secretary of the College, Francis R. Packard, 19 South 22d Street, Philadelphia, Pa., U.S.A., on or before May 1, 1915. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award. The Alvarenga Prize for 1914 has been awarded to Dr. H. B. Sheffield, New York City, for his essay entitled: "The Fundamental Principles Involved in the Use of the Bone Graft in Surgery."

ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—Walter G. Smith, M.D., F.R.C.P.I.
General Secretary—J. A. Scott, M.D., F.R.C.S.I.

SECTION OF OBSTETRICS.

President—M. J. Gibson, M.D.
Sectional Secretary—Gibbon FitzGibbon, M.D., F.R.C.P.I.

Friday, October 30, 1914.

The President in the Chair.

Exhibits.

Malignant Adenoma Uteri.

Dr. Gibbon FitzGibbon showed a uterus with malignant adenoma removed from a patient aged sixty. The history of the case was:—M. B., unmarried, had been told when thirty-five years of age that she had a fibroid of the uterus and was advised not to have it removed. Menstruation was always normal, and the menopause occurred at forty-eight years of age normally. Since then there had been no bleeding or discharge until seven months before being first seen by Dr. FitzGibbon. Bleeding had then occurred and lasted fourteen days, and had been recurring irregularly ever since—it was sometimes profuse. It had been continuing heavy for a month when first seen, and the patient was very anæmic. On examination the uterus was found uniformly enlarged, about the size of a four months' pregnancy, somewhat soft, and the cervix was small and atrophic. The diagnosis of myoma was made—probably undergoing some degeneration. Laparotomy and panhysterectomy was performed, and the patient made an excellent recovery. The specimen showed a soft cauliflower growth filling up the cavity of the uterus and growing all over the walls, which were very thick, about $1\frac{1}{4}$ inches, and at one part showing a line of demarcation which might have been the capsule of an original fibroid.

Sections of the growth showed typical adenoma with very marked malignant characters in some parts, and invading the wall of the uterus. The cervix was quite free from invasion. A second section was shown of a non-malignant adenoma removed from a girl of twenty-eight, which had been extruded from the uterus as a polypus, and showing great similarity in structure, but without any malignant characters.

Sir William Smyly said there could be little doubt that Dr. FitzGibbon's explanation was the correct one—namely, that it was a myoma which had been invaded by a cancer. He recalled a case of a similar nature which he mistook for myoma.

Dr. Rowlette said the specimen appeared to him to be a carcinoma occurring in a uterus already the seat of a fibroid. Such an event was not uncommon where a fibroid gave rise to irritation of the endometrium. Dr. FitzGibbon's second specimen was of much interest for comparison. There was in it a great growth of glandular tissue without obvious evidence of malignancy, but nevertheless he would regard the case with suspicion.

The President said that the greater frequency of carcinoma of the body in cases where fibro-myomata are present over that of cases in which they are absent, and the fact that degeneration of fibro-myomata is most usual after the menopause has necessitated that we should abandon the opinion that after the menopause fibro-myomata are not likely to give trouble.

Fibroid Uterus.

Dr. Solomons said that there was nothing remarkable about the size of the specimen shown. The girl from whom it was removed was unmarried, aged twenty-seven years, and came to Mercer's Hospital complaining of uterine hæmorrhage. On examination fibroid uterus was diagnosticated though the uterus was not at all typical, being quite smooth and feeling like an ordinary myometritis. Palliative curettage and styptic treatment was carried out, and the patient was told to return if the symptoms did not abate. She was sent to a convalescent home, but as the hæmorrhage recurred, she returned to the hospital. She was then very blanched in

appearance. The abdomen was opened in the hope of performing myomectomy, but when the uterus was opened it was found to be studded with myomata, some submucous, others interstitial. Hysterectomy was done. The case showed how impossible it was to promise myomectomy. He considered that the devotees of *x*-ray treatment for myoma would possibly have looked on this case as favourable. It, however, appeared to him that owing to the patient's condition there was nothing to be done but to open the abdomen and remove the uterus.

Dr. Sheill considered that the most important point about the specimen was the early history. He referred to the remark by Dr. Solomons that he (Dr. Solomons) "considered it to be an ordinary case of enlarged uterus, and that curetting, followed if necessary by styptic treatment, would have been most useful." He would like to know what Dr. Solomons looked on as an "ordinary" case of enlarged uterus for which curetting and styptic treatment would be useful.

The President said that he had been puzzled on some occasions when he had to deal with such cases as Dr. Solomons' exhibit illustrated, when, owing to the infiltration of the uterus with fibro-myomata, myomectomy without practical destruction of the uterus proved to be impossible. He considered that hysterectomy was the only course which could have been adopted in this case.

Dr. Solomons said that when he saw the case first he had recorded it as one of fibroid uterus, though it was very atypical on palpation, resembling more a uterus enlarged by myometritis. He informed the patient before the second operation that he would endeavour to remove the tumours without the uterus, but got permission, if he found this impossible, to remove the uterus. He considered if the permission were not obtained it would be better to defer hysterectomy.

The Heart and Kidneys in Pregnancy.

Dr. M'Allister gave a summary of the various conditions of the heart which might influence pregnancy, and the forms of renal lesions which might pre-exist or occur during pregnancy.

Sir William Smyly said he did not remember any patients

with which he had anything to do actually dying from heart disease during pregnancy or labour. In practice one had to go according to symptoms much more than physical signs; if the heart was competent it might be left alone, but if it became incompetent it would be necessary to try to restore it by the administration of strophanthus and digitalis, and if not successful the patient should be delivered. Speaking of affections of the parenchyma of the kidney which he thought Dr. M'Allister said do not occur during the first few months of pregnancy, he had at present a patient who was three months pregnant and who showed very marked signs of kidney disease. He was not sure at first as to whether it was disease of a chronic nature or disease peculiar to a pregnant woman. He tried the patient on a milk diet, but she grew worse, and he, therefore, felt inclined to end the pregnancy on account of the size of the uterus and the fact that there was no quickening which indicated that it was, perhaps, a molar pregnancy. The patient also developed ocular symptoms of an alarming kind. Taking all the signs, together with the fact that she was passing very little urine, he decided to empty the uterus of what appeared to be a hydatidiform mole. The dropsical symptoms afterwards disappeared and the patient recovered. He thought the fact that patients improved rapidly after the removal of the ovum suggested that the ovum was the cause of the toxæmia, and hence one would imagine that to remove the ovum was the best cure. He always advocated that in cases which do not improve under treatment the uterus should be emptied. He understood Dr. M'Allister to suggest that increased blood pressure was a good thing, but in eclampsia he had always considered that greatly increased blood pressure was the chief danger.

Dr. Hastings Tweedy said he approached the conditions discussed from a different standpoint to that of Dr. M'Allister, whom he congratulated on the excellence of his communication. The latter considered that the kidney and the heart disease must be held accountable for the grave prognosis and for the associated toxic state. He (Dr. Tweedy) held on the other hand that all the pathological conditions found in association with toxæmia arose as a consequence of the poison, and in no instance was the poisoned state the result of the kidney lesions. He was glad

to understand that the deleterious influence of milk and other foods had become recognised, at all events in Dublin, as a causal agency in the outset of eclamptic fits. It appeared to the speaker as absolutely proved that food-stuffs acted as partial poisons to almost all pregnant women. He thus accounted for the presence of morning sickness. A tolerance against these food poisons became established in the majority of instances, but when this was not so, acute toxæmic degeneration resulted. Hydræmia seemed an exception to his rule. This condition he found nearly always associated with a dead or imperfect ovum and a diseased placenta. All the other forms of pregnancy degeneration of organs could be arrested by abstention from all forms of food, combined with free purgation, and the ingestion of large quantities of alkaline water. In this way will be brought about the cure of the kidney and special form of heart disease so much feared by Dr. M'Allister.

Dr. Crofton said there were several points that might be suggested for investigation, the first being the bacteriology of the urine. In certain cases of eclampsia he had found the urine to be badly infected with micro-organisms. He suggested that it might be well to examine the urine bacteriologically in order to see if this was a common occurrence. He pointed out that in pregnancy there was usually great hypertrophy of the suprarenals, and that if the secretion of these was unbalanced it might be a cause of the high blood pressure. Another point not to be lost sight of was the influence of diet on the flora of the gastro-intestinal tract. He thought it quite possible that in these cases part of the vicious circle was produced by septicæmia brought about in this particular way. He thought it might be possible to devise some experiments as to the nature of the protein that was being excreted by the kidneys in these cases—whether it was food protein or the proteins of the blood. He thought the term arteriosclerosis ought not to be applied to the condition of the uterine arteries in pregnancy. It was obvious that they were only hypertrophied and capable of retrogression.

Dr. Solomons said although it was fairly well recognised that hypertrophy of the heart occurred in pregnancy there were some cases, he considered, in which what appeared to be hypertrophy was really displacement. He would like to

know whether Dr. M'Allister had noted at what time during pregnancy this hypertrophy commenced, and whether it occurred all through the pregnancy. He also inquired if Dr. M'Allister had noted during his observations whether in the pregnant woman there was an increase of pulse rate when she assumed the erect posture. It appeared to him that everybody accepted the food theory as advanced by Dr. Tweedy. He mentioned a case of eclampsia where the patient was well for twenty-four hours, but when milk was given a fatal result ensued. He recalled a case of toxæmia of pregnancy reported by him when Assistant Master of the Rotunda in which the patient had general anasarca with all signs of kidney disease, and a mitral murmur. All these symptoms and signs disappeared when labour had been induced.

The President said that regarding heart conditions he had seen a certain amount of trouble, even in ordinary uncomplicated disease of the heart. The increase of blood pressure during pregnancy or labour tells on a diseased heart. In cases of the toxæmia of pregnancy he considered the blood pressure of great importance. It was of benefit because it helped excretion, but the evil effect of continued high blood pressure on a poisoned heart shows itself after convulsions supervene when the pulse is the best index of the gravity of the case. When, in spite of treatment for the toxæmia, the blood pressure continues to increase, it is usual to find corresponding evidence in the urine and general condition of the patient that the toxæmia is increasing. In some of these cases the patient has practically no symptoms of toxæmia before the onset of convulsions or coma, and in these cases most information is to be derived from the blood pressure and urine. Sometimes the auto-intoxication becomes extreme, apparently the anterior cerebral cortex being unusually irritant proof, and finally the patient dies without convulsions, or after one or a few. If in cases of toxæmia the patient's condition did not rapidly disimprove, absolute rest, purgatives and nothing but water might be tried for four days. The blood pressure, urine and general condition of the patient decide the progress of the case. He failed to see how food could produce the toxæmia of pregnancy, but when toxæmia is present, food, and particularly milk, should be withheld until the toxæmia has definitely

decreased. By throwing extra work on the injured liver and kidneys, food aggravates the disturbances in them.

Dr. M'Allister, in replying to the remarks, said Sir William Smyly's case was of exceptional interest, as it bears out the relationship supposed to exist between disease of the kidney and hydatidiform mole. A particularly interesting point was that the case had not sufficiently advanced for the fœtus to have been preserved, and this would support the idea that if it was a poison within the uterus that was responsible, then that poison was not a fœtal poison but one derived from the other intra-uterine tissues. As to the relationship between blood pressure and eclampsia, he considered it more favourable for a patient to have a moderately high blood pressure if she had or was going to get eclampsia. He thought that possibly many patients did not get eclampsia because their blood pressure was high. Dealing with the idea as to whether a toxæmia brings about the kidney condition or *vice versâ*—bearing in mind those cases where eclampsia develops very rapidly and the urine is found to have altered tremendously within twenty-four hours, such a rapid change suggested some reflex nervous force interfering with the circulation through the kidney, and in that way with the excretion of certain poisonous substances. In some such way one must explain these rapidly developing cases. Referring to the infarcts recently described by Professor Young, he thought the idea suggested was that it was not these infarcts as seen that are responsible for eclampsia, but that it was their early stages that were responsible, as in these stages there was localised interference with the circulation in the placental tissue, and it was in this stage autolytic poisons were absorbed by the surrounding blood vessels, thus causing symptoms of toxæmia. He agreed that a rise in blood pressure made one anxious, but the mere fact that the blood pressure was rising would not justify interference. He considered it well to wait until the blood pressure had risen to 190 or 200 mm. of mercury, and that even then one should be guided by the effect of the rise on the patient. In reply to Dr. Crofton he could hardly agree that bacteriological examination was easy on account of the difficulty of getting urine from the bladder without contamination occurring.

SANITARY AND METEOROLOGICAL NOTES.

Vital Statistics.

For four weeks ending Saturday, October 31, 1914

IRELAND.

The average annual death-rate represented by the deaths—exclusive of deaths of persons admitted into public institutions from without the respective districts—registered in the week ended October 31, 1914, in the Dublin Registration Area and the twenty-six principal provincial Urban Districts of Ireland, was 15.2 per 1,000 of their aggregate population, which for the purposes of these returns is estimated at 1,205,280. The deaths registered in each of the four weeks of the period ended on Saturday, October 31, and during the whole of that period in certain of the districts, alphabetically arranged, correspond to the following annual rates per 1,000 :—

County Boroughs, &c.	Week ending				Average Rate for 4 weeks
	Oct. 10	Oct. 17	Oct. 24	Oct. 31	
27 Town Districts	**15.4**	**16.2**	**15.8**	**15.2**	**15.7**
Dublin Reg. Area ...	17.5	17.0	15.3	14.4	16.0
Dublin City	19.1	18.3	15.8	15.3	17.1
Belfast	14.5	17.3	16.9	14.0	15.7
Cork	12.9	19.0	17.0	21.8	17.7
Londonderry	12.7	10.1	8.9	11.4	10.8
Limerick	21.7	17.6	20.3	21.7	20.3
Waterford ...	22.8	17.1	22.8	22.8	21.4

The deaths (excluding those of persons admitted into public institutions from without the respective districts) from certain epidemic diseases registered in the 27 town districts during the

week ended Saturday, October 31, 1914, were equal to an annual rate of 2.2 per 1,000. Among the 107 deaths from all causes for Belfast were 1 from enteric fever, 6 from measles, 3 from scarlet fever, 1 from whooping-cough, 1 from diphtheria, and 6 (all of children under 2 years of age) from diarrhœa and enteritis. Of the 32 deaths from all causes in Cork, 3 were caused by whooping-cough, and 2 children under 2 years of age died from diarrhœa and enteritis. Three of the 16 deaths from all causes in Limerick were ascribed to scarlet fever, and 1 (that of a child under 2 years of age) to diarrhœa and enteritis. Among the 12 deaths from all causes in Waterford, 4 were due to scarlet fever, and 1 (a child under 2 years of age) to diarrhœa and enteritis. Diphtheria caused 1 of the 3 deaths from all causes in Drogheda, 2 of the 6 deaths from all causes in Kilkenny, and 1 of the 2 deaths recorded in Tralee.

DUBLIN REGISTRATION AREA.

The Dublin Registration Area consists of the City of Dublin as extended by the Dublin Corporation Act, 1900, together with the Urban Districts of Rathmines, Pembroke, Blackrock, and Kingstown. The population of this area is 406,000, that of the city being 310,467, Rathmines, 39,155, Pembroke 30,240, Blackrock 9,197, and Kingstown 16,941.

In the Dublin Registration Area the births registered during the week ended October 31 amounted to 173—88 boys and 85 girls, and the deaths to 118—59 males and 59 females.

DEATHS.

The total deaths registered, numbering 118, represent an annual rate of 15.2 per 1,000. The annual rate for the past forty-four weeks was 22.0 per 1,000, and the average annual rate for the corresponding period of the past ten years was 22.6 per 1,000 of the mean population for all deaths registered.

Among the total deaths registered are 2 from enteric fever, 1 from measles, 2 from scarlet fever, 2 from influenza, and 7—all of children under 2 years of age—from diarrhœa and enteritis. In the three preceding weeks deaths from enteric fever had been 2, 3, and 0; deaths from measles, 0, 0, and 0; deaths from scarlet fever, 0, 1, and 0; deaths from influenza,

State of Infectious Disease in the Dublin Registration Area, and in Belfast, Cork, Londonderry, Limerick, and Waterford.

The following Table shows the Number of Cases of Infectious Diseases notified under the "Infectious Diseases (Notification) Act, 1889" and the "Tuberculosis Prevention (Ireland) Act, 1908," in the Dublin Registration Area (viz.—the City of Dublin and the Urban Districts of Rathmines and Rathgar, Pembroke, Blackrock, and Kingstown), and in the Cities of Belfast, Cork, Londonderry, Limerick, and Waterford, during the week ended October 31, 1914, and during each of the preceding three weeks. An asterisk (*) denotes that the disease in question is not notifiable in the District.

Cities and Urban Districts	Week ending	Measles	Rubella, or Epidemic Rose Rash	Scarlet Fever	Typhus	Relapsing Fever	Diphtheria	Membranous Croup	Pyrexia (origin uncertain) *a*	Enteric or Typhoid Fever	Erysipelas	Puerperal Fever	Whooping-cough	Cerebro-spinal Fever	Diarrhœal Diseases	Pulmonary Tuberculosis	Total
City of Dublin	Oct. 10	•	•	8	–	–	4	–	–	16	5	–	•	–	•	24	57
	Oct. 17	•	•	11	–	–	11	–	–	9	2	–	*	1	•	25	59
	Oct. 24	•	•	16	–	–	13	–	2	25	2	–	*	–	•	26	84
	Oct. 31	•	•	23	1	–	6	–		14	3	–	*	–	•	26	73
Rathmines and Rathgar Urban District	Oct. 10	•	•	2	–	–	–	–	–	1	1	–	*	•	•	•	4
	Oct. 17	•	*	1	–	–	1	–	–	–	–	–	•	•	•	•	2
	Oct. 24	•	•	2	–	–	–	–	–	2	–	–	•	•	•	*	4
	Oct. 31	•	*	1	–	–	3	–	–	–	–	–	*	•	•	*	4
Pembroke Urban District	Oct. 10	–	–	–	–	–	–	–	–	2	–	–	–	*	•	1	3
	Oct. 17	–	–	–	–	–	1	–	–	–	–	–	–	*	•	3	4
	Oct. 24	–	–	–	–	–	–	–	–	–	–	–	–	*	•	1	1
	Oct. 31	–	–	–	–	–	–	–	–	–	–	–	–	*	•	–	–
Blackrock Urban District	Oct. 10	–	•	–	–	–	1	–	–	–	–	–	•	–	•	*	1
	Oct. 17	–	•	–	–	–	–	–	–	–	–	–	•	–	•	•	–
	Oct. 24	–	•	4	–	–	–	–	–	–	1	–	•	–	•	•	5
	Oct. 31	–	•	–	–	–	–	–	–	–	–	–	•	–	•	•	–
Kingstown Urban District	Oct. 10	•	•	–	–	–	–	–	–	–	–	–	•	*	•	–	–
	Oct. 17	•	•	2	–	–	–	–	–	–	–	–	•	*	•	–	3
	Oct. 24	*	•	–	–	–	–	–	–	–	–	–	*	*	•	1	1
	Oct. 31	•	•	–	–	–	–	–	–	–	–	–	•	•	•	–	–
City of Belfast	Oct. 10	•	•	61	–	–	8	1	–	6	2	1	•	–	•	3	82
	Oct. 17	•	•	74	–	–	3	–	–	5	6	–	•	–	•	1	89
	Oct. 24	•	•	76	–	–	8	–	–	2	3	–	•	–	•	2	91
	Oct. 31	•	•	68	–	–	6	–	–	2	4	–	•	–	•	5	85
City of Cork	Oct. 10	1	•	5	–	–	–	–	–	1	2	–	•	•	1	•	10*b*
	Oct. 17	–	•	6	–	–	3			–	2	–	•	•	–	•	11
	Oct. 24	3	•	8	–	–	1	1	–	2	2	–	•	•	–	•	17
	Oct. 31	3	•	14	–	–	2	–	–	1	–	–	•	•	–	•	20
City of Londonderry	Oct. 10	•	•	5	–	–	–	–	–	–	–	–	•	•	•	•	5
	Oct. 17	•	•	–	–	–	–	–	–	–	1	–	•	•	•	•	1
	Oct. 24	•	•	–	–	–	1	–	–	–	3	–	•	•	•	•	4
	Oct. 31	•	•	1	–	–	2	–	–	–	–	–	•	•	•	•	3
City of Limerick	Oct. 10	•	•	3	–	–	–	–	–	–	–	–	•	–	•	•	3
	Oct. 17	•	•	5	–	–	–			–	–	–	•		•	•	5
	Oct. 24	•	•	8	–	–		–	–	–	–	–	•	–	•	•	8
	Oct. 31	•	•	4	–	–	–	–	–	–	–	–	•		•	•	4
City of Waterford	Oct. 10	•	•	30	–	–	–	–	–	–	–	–	•	•	•	–	30
	Oct. 17	•	•	35	–	–	–	–	–	–	–	–	•	•	•	3	38
	Oct. 24	•	•	39	–	–	1	–	–	1	–	–	•	•	•	1	42
	Oct. 31	•	•	22	–	–	–	–	–	3	–	–	•	•	•	–	26

a Continued Fever. *b* Not including 1 case of varicella.

0, 2, and 0; and deaths from diarrhœa and enteritis of children under 2 years, 14, 11, and 11 respectively.

Deaths from all forms of tuberculous disease, numbering 22, 29, and 22 respectively in the three preceding weeks, fell to 15, this number comprising 11 deaths from pulmonary tuberculosis, 3 from tuberculous meningitis, and 1 from disseminated tuberculosis.

There were 8 deaths from cancer.

Three deaths were caused by broncho-pneumonia, 2 by lobar pneumonia, and 3 by pneumonia (type not distinguished).

Of deaths of infants under one year of age, 2 were attributed to convulsions and 3 to congenital debility.

Organic diseases of the heart caused 10 deaths and bronchitis 11 deaths.

Three accidental deaths include 2 caused by burns or scalds (the ages of the victims being 4 months and $8\frac{1}{2}$ years, respectively), and 1 by drowning.

In 3 instances the cause of death was "uncertified," there having been no medical attendant during the last illness. These cases include the deaths of one infant under one year old and of one person aged 69 years.

Twenty-nine of the persons whose deaths were registered during the week were under 5 years of age (20 being infants under one year, of whom 2 were under one month old), and 25 were aged 65 years and upwards, including 17 persons aged 70 and upwards. Among the last-named were 11 aged 75 and upwards, of whom 2 (females) were stated to have been aged 97 and 95 years respectively.

Fifty-four of the deaths registered during the week occurred in hospitals and other public institutions; of this number 7 took place in the North Dublin Union Workhouse and 10 in the South Dublin Union Workhouse.

Cases of Infectious Diseases under Treatment in Dublin Hospitals.

During the week ended October 31, 1914, 18 cases of enteric fever were admitted to hospital, 19 were discharged, there were 3 deaths, and 88 cases remained under treatment in hospital at the close of the week, the respective numbers in hospital at the close of the 3 preceding weeks having been 79, 85, and 92.

One case of typhus was admitted to hospital and remained under treatment at the close of the week.

Two cases of measles were admitted to hospital during the week, 1 was discharged, and 9 cases remained under treatment at its close. At the end of the 3 preceding weeks such cases had been 3, 3, and 8, respectively.

Twenty-nine cases of scarlet fever were admitted to hospital, 16 were discharged, 2 died, and 109 cases remained under treatment at the close of the week. This number is exclusive of 21 convalescents at Beneavin, Glasnevin, the Convalescent Home of Cork Street Fever Hospital. At the close of the 3 preceding weeks the cases in hospital had been 61, 75, and 98, respectively.

Eleven cases of diphtheria were admitted to hospital and 12 were discharged. The cases in hospital, which at the close of the 3 preceding weeks had numbered 43, 44, and 52, respectively, were 51 at the close of the week.

In addition to the above-named diseases, 4 cases of pneumonia were admitted to hospital, 7 were discharged, there were 2 deaths, and 20 cases remained under treatment at the end of the week.

ENGLAND AND SCOTLAND.

The mortality in the week ended Saturday, October 31, in 97 large English towns (including London, in which the rate was 14.1) was equal to an average annual death-rate of 13.5 per 1.000 persons living. The average rate for 16 principal towns of Scotland was 14.6 per 1.000, the rate for Glasgow being 16.5, and that for Edinburgh 14.1.

INFECTIOUS DISEASE IN EDINBURGH.

The Registrar-General has been favoured by A. Maxwell Williamson, M.D., B.Sc., Medical Officer of Health for Edinburgh, with a copy of his Return of Infectious Diseases notified during the week ended October 31. From this Report it appears that of a total of 146 cases notified, 80 were of scarlet fever, 34 of diphtheria, 26 of phthisis, and 6 of erysipelas. Among the 859 cases of infectious diseases in hospital at the close of the week were 426 cases of scarlet fever, 188 of phthisis, 140 of diphtheria, 13 of measles, 11 of erysipelas, and 10 of enteric fever.

Meteorology

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of October, 1914.

Mean Height of Barometer, - - -	30.036 inches.
Maximal Height of Barometer (4th, at 9 p.m.),	30.503 ,,
Minimal Height of Barometer (31st, at 9 p.m.),	29.310 ,,
Mean Dry-bulb Temperature, - - -	51.4°.
Mean Wet-bulb Temperature, - -	49.7°.
Mean Dew-point Temperature, - -	48.1°.
Mean Elastic Force (Tension) of Aqueous Vapour,	.339 inch.
Mean Humidity, - - - -	88.6 per cent.
Highest Temperature in Shade (on 3rd), -	64.0°.
Lowest Temperature in Shade (on 29th), -	38.2°.
Lowest Temperature on Grass (Radiation) (20th)	36.6°.
Mean Amount of Cloud, - - -	68.3 per cent.
Rainfall (on 12 days), - - - -	1.244 inches.
Greatest Daily Rainfall (on 31st), - -	.476 inch.
General Directions of Wind, - -	W., N.W., E.S.E.

Remarks.

October, 1914, was a warm, generally dry month. The mean temperature was 3° in excess and the rainfall was only 43 per cent. of the average, the rain-days (12) being only two-thirds of the average number (18). Until the 21st the weather was for the most part fine, and the air remarkably still for the time of year. These conditions were connected with a high and steady atmospheric pressure. After the 20th the barometer was low and very unsteady, and the weather became broken and rainy—in fact, five-sixths (1.009 inch) of the total precipitation (1.244 inches) of the month occurred in the last week (25th–31st).

The mean height of the barometer was 30.036 inches, or 0.196 inch above the corrected average value for October—namely, 29.840 inches. The mercury rose to 30.503 inches at 9 p.m. of the 4th, and fell to 29.310 inches at 9 p.m. of the 31st. The observed range of atmospheric pressure was, therefore, 1.193 inches.

The mean temperature deduced from daily readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 51.4°, or

3.3° below the value for September, 1914. The arithmetical mean of the maximal and minimal readings was 52.5°, compared with a thirty-five years' (1871–1905) average of 49.5°. Using the formula, *Mean Temp.* = *Min.* + (*Max.* — *Min.*) × .485, the mean temperature was 52.4°, or 3.1° above the average mean temperature for October, calculated in the same way, in thirty-five years, 1871–1905, inclusive (49.3°). On the 3rd the thermometer in the screen rose to 64.0°—wind, W.; on the 29th the temperature fell to 38.2°—wind, N.E. The minimum on the grass was 36.6°, on the 20th—wind calm.

In Dublin the mean maximal temperature was 57.2°, compared with the average (54.7°); and the mean minimal temperature was 47.8°, compared with the average, 44.3°. The arithmetical mean temperature (52.5°) was 3.0° above the average (49.5°); the mean dry-bulb readings at 9 a.m. and 9 p.m. were 51.4°. In the forty-nine years ending with 1914, October was coldest in 1892 (M. T. = 44.8°) and in 1896 (M. T. = 45.0°). It was warmest in 1908 (M. T. = 55.4°) and in 1912 (M. T. = 54.9°). In 1913, the M. T. was 52.2°.

The rainfall was 1.244 inches, distributed over 12 days. The rainfall and the rain-days were considerably below the average. The average rainfall for October in the thirty-five years, 1871–1905, inclusive, was 2.870 inches, and the average number of rain-days was 18. In 1880 the rainfall in October was very large—7.358 inches on 15 days. In 1875, also, 7.049 inches fell on 26 days. On the other hand, in 1904 only .454 inch fell on 11 days, in 1890 only .639 inch fell on but 11 days, in 1884 only .834 inch on but 14 days, and in 1868 only .856 inch on 15 days. In 1911, 3.787 inches were recorded on 20 days, in 1912 1.665 inches on 13 days, and in 1913, 3.760 inches on 17 days.

High winds (force 4 to 7) were noted on 3 days, but never attained the force of a gale (force 8). The atmosphere was foggy in Dublin on the 17th, 19th and 23rd. There was a lunar corona on the 5th. Lunar halos were seen on the 2nd, 4th and 27th. An aurora was seen on the 25th. Thunderstorms occurred at 4 30 a.m. and 9 a.m. of the 29th. Hail fell also on that same day.

The rainfall in Dublin during the ten months ending October 31st, 1914, has amounted to 17.071 inches on 152 days, compared

with 24.742 inches on 157 days in 1913, 24.323 inches on 171 days in 1912, 16.386 inches on 140 days in 1911, 27.330 inches on 177 days in 1910, 21.106 inches on 158 days in 1909, 12.366 inches on 123 days during the same period in 1887 (the dry year), and a thirty-five years' (1871–1905) average of 23.030 inches on 164 days.

Mr. Sidney A. Clark reports that at the Normal Climatological Station in Trinity College, Dublin, the mean height of the barometer was 30.032 inches, the range of atmospheric pressure being from 30.47 inches at 9 p.m. of the 4th and 9 a.m. of the 5th to 29.33 inches at 9 p.m. of the 31st. The mean value of the readings of the dry-bulb thermometer at 9 a.m. and 9 p.m. was 52.5°. The arithmetical mean of the daily maximal and minimal temperatures was 52.1°. The screened thermometers rose to 65.6° on the 3rd, and fell to 37.0° on the 20th. On the 3rd the grass minimum was 30.0°. Rain fell on 9 days to the amount of 1.235 inches, the greatest fall in 24 hours being .514 inch on the 31st. The duration of bright sunshine, according to the Campbell-Stokes recorder, was 53.7 hours, of which 5.8 hours occurred on the 3rd. The mean daily sunshine was 1.7 hours. The mean temperature of the soil at 9 a.m. at a depth of one foot was 53.6° ; at a depth of 4 feet it was 54.7°.

Captain Edward Taylor, D.L., returns the rainfall at Ardgillan, Balbriggan, Co. Dublin (height above sea level, 210 feet), as 2.05 inches on 11 days, the largest measurement in one day being .79 inch on the 25th. The rainfall was .64 inch below the average and the rain-days were 6 below the average. From January 1 to October 31, the rainfall at Ardgillan has been 18.73 inches on 133 days, or 4.83 inches below the average, while the rain-days were 21 below the average. The highest shade temperature in October was 63.8° on the 3rd, the lowest was 36.6° on the 28th.

At Stirling, Clonee, Co. Meath, Mr. J. Pilkington registered a rainfall of 1.92 inches on 14 days, the maximum in any one day being .57 inch on the 25th. On the 31st .50 inch was recorded. Up to the 21st only .27 inch of rain fell on 5 days. Thunder, lightning and heavy hail were observed during the early morning of the 27th. From January 1 to October 31,

1914, rain fell on 145 days to the amount of 20.57 inches. This station stands 231 feet above sea-level.

Mr. T. Bateman reports that the rainfall at The Green, Malahide, Co. Dublin, was 2.05 inches on 11 days, the greatest fall in 24 hours being 1.10 inches on the 25th.

At the Royal Botanic Gardens, Glasnevin, rain fell on 14 days to the amount of 1.66 inches, the greatest daily fall being .44 inch on the 31st. On the 25th, .41 inch was recorded.

At the Ordnance Survey Office, Phœnix Park, Dublin, the October rainfall was 1.675 inches on 13 days. The heaviest fall in 24 hours was .500 inch on the 31st. The total amount of bright sunshine was 74.5 hours, the maximal duration on any one day being 7.6 hours on the 26th.

Dr. Christopher Joynt, F.R.C.P.I., registered 1.205 inches of rain on 12 days at 21 Leeson Park, Dublin, the largest measurement in 24 hours being .460 inch on the 31st. The ten months' rainfall in 1914 at this station amounts to 16.205 inches on 140 days.

The rainfall recorded by Miss C. Violet Kirkpatrick at Cheeverstown Convalescent Home, Clondalkin, Co. Dublin, was 1.83 inches on 7 days. The heaviest rainfall in 24 hours was .47 inch on the 29th.

Dr. Arthur S. Goff reports that rain fell on 15 days at Belfort House, Dundrum, Co. Dublin, the amount being 1.59 inches, of which .52 inch was measured on the 31st. The temperature range was from 65° on the 3rd and 7th to 39° on the 29th The mean temperature in the shade was 52.7°. Thunder and lightning occurred on the morning of the 29th.

At Manor Mill Lodge, Dundrum, Co. Dublin, Mr. George B. Edmondson measured 1.49 inches of rain on 12 days, the maximum in 24 hours being .51 inch on the 31st. The mean temperature of the month was 51.3°, the thermometer rising to 61° on the 4th and falling to 38° on the 29th.

Mr. W. J. McCabe, on behalf of the Right Hon. Laurence P. Waldron, D.L., returns a rainfall of 1.31 inches on 9 days at Marino, Killiney, Co. Dublin. The heaviest fall in 24 hours was .52 inch on the 31st. The average October rainfall at Cloneevin, Killiney, in the 24 years, 1885–1908, was 2.985 inches on 17.2 days.

Mr. Harold Fayle sends the following report from Rosedale, Shankill, Co. Dublin (height of rain-gauge above mean sea-level,

59 feet ; above ground, 11 inches ; height of barometer cistern, 66 feet) :—

Mean Height of Barometer,	30.05 inches.
Highest corrected reading (4th, 9 p.m.),	30.51 ,,
Lowest corrected reading (31st, 9 p.m.),	29.34 ,,
Mean Dry-bulb Temperature,	52.3°.
Mean Wet-bulb Temperature,	50.3°.
Mean Vapour Pressure,	.338 inch.
Mean Humidity,	86 per cent.
Mean Maximal Temperature,	57.6°.
Mean Minimal Temperature,	46.0°.
Arithmetical Mean Temperature,	51.8°.
Absolute Maximal Temperature (8th),	64°.
Absolute Minimal Temperature (20th),	36°.
Lowest Temperature on Grass (20th),	30°.
Highest Temperature in Sun (8th),	129°.
Rainfall (on 13 days),	1.85 inches.
Greatest Daily Rainfall (31st),	0.62 inch.
Mean Amount of Cloud,	76 per cent.
General Direction of Wind,	West.

On the 21st the maximum and minimum temperatures differed by only 2°—54° and 52°. The observations for the first three days of October at Rosedale are wanting.

At Coolagad, Greystones, Co. Wicklow, Dr. John H. Armstrong, M.B., measured 2.37 inches of rain on 10 days, the maximal falls in 24 hours being .67 inch on the 25th and .54 inch on the 31st. Thunder and lightning and hail occurred at 5 30 a.m. of the 29th. From January 1 to October 31, 1914, the rainfall at Coolagad amounted to 24.12 inches on 144 days. The thermometer rose to 69° on the 3rd and fell to 40° on the 26th and 29th.

Mrs. Sydney O'Sullivan recorded 1.94 inches of rain on 11 days at Auburn, Greystones, Co. Wicklow, the greatest rainfall in 24 hours being .60 inch on the 25th. A thunderstorm with hail occurred on the 29th.

Dr. Charles Denys Hanan, M.D., reports that 2.29 inches of rain fell on 11 days at the Royal National Hospital for Consumption for Ireland, near Newcastle, Co. Wicklow. The maximum in 24 hours was .68 inch on the 25th. The mean temperature of the month at the Hospital was 51.6°, the extreme readings of the shade thermometer being—highest, 66°

on the 3rd ; lowest, 37° on the 29th. The mean maximal temperature was 56.7°, the mean minimum was 46.4°. There was a heavy thunderstorm on the 29th, between 5 a.m. and 9 a.m.

The Rev. Arthur Wilson, M.A., recorded a rainfall of 2.86 inches on 14 days at the Rectory, Dunmanway, Co. Cork. This fall was 2.04 inches below the average. The heaviest fall in 24 hours was .70 inch on the 24th. October was a very fine month in general and warmer than usual, though the last 5 days were cold. From September 25th to October 10th inclusive the rainfall was only .080 inch. The total rainfall for the completed 10 months of 1914 is 49.06 inches, compared with an average for 10 years of 45.35 inches. The average rainfall of October for the past 8 years is 5.78 inches.

OCULO-MOTOR PARALYSIS OF OTITIC ORIGIN.

In a paper read before the Clinical Congress of Surgeons of North America, and published in the *Lancet*, November 14, 1914, page 1143, Mr. F. H. Westmacott, F.R.C.S. Eng., of Manchester, describes at length a case which definitely illustrates the pathological sequence and association of middle-ear disease and oculo-motor paralysis, which is the rarest form of otogenic nerve lesion. The patient was a young lady, aged twenty-nine years. The cause of the paralysis of the right third nerve was primarily cholesteatoma in the right auditory meatus, which had eroded through the tegmen antri and set up a subdural abscess. The infection worked along the superior petrosal sinus, and so to the trunk of the oculo-motor nerve. It became acute and caused the rapid development of symptoms.

Mr. Westmacott considers that otogenic paralysis of the oculo-motor and other orbital nerves is clearly established, but difficulty arises when an endeavour is made to establish the pathological lesion present. When paralysis exists with an ipsolateral otorrhœa, accompanied by headache and vomiting, an exploration of the auditory apparatus should be at once undertaken to determine the extent and limits of the disease, whilst at the same time it should be borne in mind that the examination of the nasal fossæ and accessory cavities may reveal the focus of disease, in so much as nasal disease infection is far more common than aural infection in the production of paralysis of the oculo-orbital nerves.

PROFESSIONAL CLASSES WAR RELIEF COUNCIL.

We are asked to make known the requirements of the Maternity Nursing Home which is being started by the Professional Classes War Relief Council. Mr. J. Pierpont Morgan has most generously lent the Council 13 and 14 Prince's Gate, London, S.W., for the Nursing Home for the period of the war, and now the Council have to furnish it. Many people who are not in a position to give money may be able to give or lend some of the things that go to the furnishing of a house, such as furniture of all sorts, house and table-linen, blankets, cutlery, plate, screens; also bassinets and baby clothes. Would those kindly offering help write first to Mrs. Hills, 32 Prince's Gardens, S.W., stating what they are prepared to give and what to lend. On acceptance of their offers they will be asked to send the articles direct to 13 Prince's Gate, S.W., clearly marked in the case of articles on loan. Crockery and glass can be accepted only as a gift, as the Council cannot insure against breakage. All furniture will be insured against fire.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

At a meeting of the College held on Wednesday, October 21, 1914, the following gentlemen, having passed the requisite examinations between the 6th and 11th of July, 1914, were admitted Fellows:—Thomas Stevens Allen, M.R.C.S. Eng., L.R.C.P., Lond., London; Arthur James Ballantine, M.B., Ch.B. Univ. Edin., Cape Town; Norman Hay Bolton, M.B., Ch.B. Univ. Edin., Nottingham; Henry Harvard Davis, M.R.C.S. Eng., L.R.C.P. Lond., Glamorgan; Henry Ernest King Fretz, L.R.C.S.E. (Triple Qual.), London; William Gordon Goudie, M.B., Ch.B. Univ. Glasg., Glasgow; David Livingstone Graham, M.B., Ch.B. Univ. Glasg., Captain, Indian Medical Service; John Donald Gunn, M.B., Ch.B. Univ. Edin., Edinburgh; Douglas James Guthrie, M.D. Univ. Edin., Edinburgh; Arthur Joseph Gordon Hunter, M.D. Univ. Edin., Linlithgow; John Brown Dalzell Hunter, M.B., Ch.B. Univ. Glasg., Capt., Indian Medical Service; Frederic George Lloyd, M.R.C.S. Eng., L.R.C.P. Lond., London, S.E.; Richard Manwaring Manwaring-White, M.D. Univ. Edin., Cheshire; Francis Leslie Nash-Wortham, M.R.C.S. Eng., L.R.C.P. Lond., Edinburgh; John William Pell, L.R.C.S.E. (Triple Qual.),

Hupeh, Central China; Garfield Arthur Platt, L.R.C.S.E. (Triple Qual.), &c., Ontario, Canada; Edmund Lewis Reid, M.B., Ch.B. Univ. Aberd., Banffshire; James Wilson Richardson, M.R.C.S. Eng., L.R.C.P. Lond., &c., Calgary, Alberta, Canada; Sydney James Simpson, M.B., Ch.B. Univ. New Zeal., Essex; Leslie Joseph Thompson, M.B., Ch.B. Univ. New. Zeal., Feilding, New Zealand; Denis Byrne Walshe, M.B., B.S. Univ. Melb., Thames, New Zealand; Russell Ernest Walker, M.B., Ch.B. Univ. Edin., Peterborough; and Walter Quarry Wood, M.B., Ch.B. Univ. Edin., Edinburgh.

At the same meeting Mr. James W. B. Hodsdon was elected President of the College for the ensuing year. Mr. Hodsdon has been a member of Council and the Representative of the College on the General Medical Council for a number of years.

THE ROYAL NAVY MEDICAL SERVICE.

THE undermentioned Acting Surgeons have been confirmed in the rank of Surgeon in His Majesty's Fleet:—

Arthur Edward Panter.	William Forbes Beattie.
Henry Brice Parker.	Herbert Wyndham Fitzroy-Williams.
Julian Lionel Priston.	
Richard Frith Quinton.	Francis Edmund Fitzmaurice.
Mark James Aitken.	Timothy Joseph O'Riordan.
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Sir JOHN MOORE, M.A., M.D., D.P.H., Dubl.; D.Sc., Oxon.; F.R.C.P.I.

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